THE STATE OF ERITREA

MINISTRY OF LAND WATER AND ENVIRONMENT

DEPARTMENT OF ENVIRONMENT

National Environmental Assessment Procedures and Guidelines

- Procedures And Guidelines For Environmental Clearance of Projects
- Monitoring And Evaluation of Projects

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Abbreviations and Acronyms

DoE	Department of Environment
EA	Environmental Assessment
EE	Environmental Evaluation
EEQ	Environmental Evaluation Questionnaire
EER	Environmental Evaluation Report
EECF	Environmental Evaluation Clearance Form
EIRCF	Environmental Impact Report Clearance Form
EMP	Environmental Management Plan
ESA	Environmental Sensitive Area
IRC	Impact Review Committee
PEIAR	Proforma Environmental Impact Assessment Report
PEMPR	Proforma Environmental Management Plan Report
MLWE	Ministry of Land, Water and Environment
PSF	Project Screening Form
ToR	Terms of Reference

FOREWORD

The judicious use of environmental resources has been a major concern for the Government of the State of Eritrea. In its 1994 Macro-policy Statement the Government has included strong statements about the restoration and protection of the environment, one of which is the consideration of environmental consequences of every intended investment as a necessary component of the overall feasibility of the venture. In 1995 a comprehensive environmental management policy document, the National Environmental Management Plan – Eritrea (NEMP-E), was produced by an inter-ministerial committee. More recently the protection of the environment and the sustainable use of natural resources have been enshrined in Article 8 of the Eritrean Constitution which was approved in May 1997. Towards this end consist efforts are being made by all Government agencies to integrate environmental considerations into their overall economic and social development plans.

Nevertheless, one of the major challenges facing us today is to transform these strong objectives and policy directives into a set of comprehensive institutional, regulatory and practical activities, which can integrate environmental management with economic development plans to ensure sustainable economic growth. The development and introduction of mechanisms to regulate environmental assessment of potential negative impacts of investment projects has been one of the main challenges for ensuring sustained economic growth. Although there has been environmental assessment of some individual projects in the past, to date no approved system of environmental assessment has been introduced into the broader economy.

In order to fill this gap the Department of Environment, Ministry of Land Water and Environment, has been working quite closely with a range of other Government agencies to develop a system of environmental impact assessment procedures and guidelines suitable to Eritrea's current and future path of economic growth. This is the National Environmental Assessment Procedures and Guidelines (NEAPG), whose process of preparation enjoyed the full participation of all concerned Government agencies. A series of intensive consultative processes took place, which involved a

total of 16 workshops and more than 350 participants, both at the central and zonal Government administration levels. The broad participation of all concerned parties in the process of developing the NEAPG is believed to have created a solid ground for its implementation.

The NEAPG screens different project types into three levels of environmental analysis depending upon the potential impact of the project.

Thus projects which do not involve major physical changes to the natural environment (e.g. health and education programmes, small-scale commercial building, etc.) will be approved without any delay for environmental assessment.

Larger projects with known potential impacts, but which have well-understood and cost-effective mitigation measures to reduce these impacts, will pass through an environmental evaluation questionnaire to ensure that project design and operation will be appropriate to Eritrean conditions. This evaluation will become part of the normal project management process of relevant Government institutions with the Department of Environmental or its zonal branch offices playing an advisory and co-ordinating role.

Large-scale projects with potentially major impacts on the environment will pass through a full impact assessment, co-ordinated by the Department of Environment. As above, environmental assessment should be viewed as a part of the normal project cycle and can run in parallel with other feasibility studies so that all environmental issues are considered before a decision on project approval is made.

The NEAPG is now ready to be tested, which in its present form might not thought to be complete and satisfying all requirements. It can, however, be improved much better through practise and rigorous applications, and this should be viewed as an opportunity and a challenge to all of us who are involved in that process. Experience in other countries clearly shows that what makes environmental assessment effective is not so much strong legislation, but rather the absence of corruption and a strong

sense of commitment to consultation and collaboration between government agencies and the general public, including the private sector. We build on these two important factors to promote the successful implementation of this newly introduced NEAPG.

Ministry of Land Water and Environment
March 1999

Section A

Procedures and Guidelines for Environmental Clearance of Projects

Chapter 1 Introduction

1.1 Title and Date of Commencement

(a) These Procedures should be referred to as "National Environmental Assessment Procedures and Guidelines. "

(b) These Procedures shall be available for use from the date of adoption by the Government of the State of Eritrea.

1.2 Definitions and Abbreviations

Unless otherwise specified :

Government: means the Government of the State of Eritrea

Procedures: means the Procedures for environmental assessment as laid out in the document: *National Environmental Assessment Procedures and Guidelines.*

Project: means any human activity, or proposed activity, which involves a change in land/water use anywhere in the State of Eritrea or its territorial waters, which results in:
modification or expansion of an existing land/water use; or

establishment of a new land use on previously unused land/water;
This definition of a project can be extended to cover plans, policies and programmes (i.e. proposed activities) where appropriate.

Project Cycle: is the system whereby a project advances from inception to operation in a discrete series of stages.

Project Owner: means the individual(s) or organisation(s), whether private, public or Government institution, proposing to implement a project .

Relevant Government Agency: is a Government body with appropriate authority for regulations, development, implementation or supervision of a particular project.

Stakeholder: means any person or group likely to be affected by a proposed project.

Impact Review Committee: is an expert group, chaired by a representative of the Department of Environment, Ministry of Land Water and Environment, which will review the reports produced by an Environmental Impact Assessment Study and make a recommendation on environmental clearance.

Project Screening: means the formal process that determines whether or not Environmental Evaluation or Environmental Impact Assessment is necessary for a proposed project.

Environment: means the total surroundings of any particular location, including the air, water, and soil, plus the biological and socio-cultural components of those surroundings.

Environmental Evaluation: means the process by which the potential impact of a proposed project on the environment is determined using primarily Eritrean resources and existing information. The results of the evaluation are contained in an Environmental Evaluation Report.

Environmental Assessment: refers to the overall process of consideration of the potential impacts of a project on the surrounding environment, including its physical, biological and socio-cultural components. The Environmental Assessment may involve only Project Screening, and/or Environmental Evaluation or Environmental Impact Assessment.

Environmental Impact Assessment: means the process by which the potential impact of a project on the environment is determined through an in-depth study involving project scoping and using both existing information and the collection of new data to produce an integrated Environmental Impact Assessment Report and Environmental Management Plan.

Environmental Audit: refers to an assessment of environmental performance of an existing project, industry or activity.

Environmentally Sensitive Area: is any area in Eritrea or its territorial waters whose natural and socio-cultural characteristics make them more vulnerable to significant negative change generated by human development activities, or , conversely, those areas whose natural characteristics make them likely to present a significantly increased risk to normal project implementation and operation through natural hazard.

Environmental Management Plan: is a report, produced as part of a full environmental impact assessment, which contains the proposed

mitigation and environmental management actions associated with a project.

Impact: means any effect, which a project may have on the surrounding environment. This may be intended or unintended, and it may be either positive or negative.

Impact Mitigation: means any activity undertaken as part of project design and implementation, which reduces or eliminates adverse(negative) impacts and enhances positive impacts on the environment.

Activity: is any action taken or work performed within a project in order to transform inputs into outputs.

Scoping Exercise: is a stage in the overall environmental assessment process, which defines the focus and the limits of the main Environmental Impact Assessment study.

Sustainability: is the ability to meet the socio-economic needs of the present generations without compromising the abilities of future generations to meet their own needs, including a healthy environment.

Public Record: is any register of documents, or other form of information, to which the general public has legal access.

1.3 Objectives

The objectives of the Procedures are :

1. to assess the significance of potential impacts which the implementation of a project may have on the environment;
2. to reduce delays in project approval by providing a standardised and transparent system for environmental assessment;
3. to improve project design and performance, thus improving overall economic efficiency through:
   - use of "environmental good practice" methods and technology where possible; i.e. to avoid introduction of inappropriate technology which fails to meet internationally recognised standards of environmental performance whenever alternatives exist at equivalent cost;
   - maximising potential for recovery and recycling in waste management;
   - avoiding long-term decline in project performance by assessing likely environmental changes over an extended time-frame; and
   - enhancing worker productivity through provision of cleaner working environments;
4. to promote economic development without unnecessary decline in environmental quality, thus ensuring that both economic development and the environment in Eritrea are sustainable in the long-term.

1.4 Implementation of the Procedures

Implementation of the Procedures is the responsibility of the Department of Environment (DoE), Ministry of Land Water and Environment, in collaboration with other Ministries and Government agencies.

1.5 Users of the Procedures

The Procedures are developed in order to provide a consistent approach and standard for environmental assessment in Eritrea. It is envisaged that the following organisations or individuals will make use of it :

(a) All government institutions involved in the preparation and implementation, management and/or financing of development projects;

(b) All international organisations involved in the preparation, implementation and/or financing of development projects;

(c) All private sector enterprises involved in the preparation, implementation and/or financing of development projects;

(d) Consultants involved in environmental impact assessment studies;

(e) The general public and groups with environmental interests (e.g. associations, NGOs, academic departments, unions).

1.6 Conditions under which the Procedures should be used

1.6.1 National projects

These Procedures are developed to ensure that adequate levels of environmental assessment, appropriate to the present and future Eritrean situation, take place for all development projects with potentially significant negative environmental impacts. Hence, Procedures should be used for assessment of the potential environmental impact of all development projects included in the Project Screening List (see Appendix A). New project types not appearing in Appendix A should also undergo screening and assessment where appropriate, and should be added to Appendix A when it is revised. Some project types which fall under other (sectoral) environmental assessment procedures, guidelines or regulations and forming part of existing legislation (i.e. full scale mining or oil and gas production) need not pass through these Procedures.

1.6.2 International projects

International institutions and organisations which are, or may be involved in development projects in Eritrea should use these Procedures.

Chapter 2 Project Screening

2.1 Introduction

All development projects should pass through a screening process in order to establish their appropriate level of environmental assessment (EA). Project screening of a proposed development project is required:

- to determine whether, for any particular project, environmental impacts which might arise from implementing a project are potentially significant, that is whether environmental assessment is required;

  and then

- to assign development projects to their appropriate level of environmental assessment. Environmental assessment could be in the form of an Environmental Evaluation (EE) or an Environmental Impact Assessment (EIA), or whether the project can proceed with no further environmental assessment.

In general, it is the type, size, location and mode of operation of projects which determines their likely environmental impact. Study of these project attributes is the major focus of all environmental assessment. The environmental assessment process is summarised in Figure 1 on the following page. The initial project screening should be based upon the Project Screening List contained in Appendix A. The project screening procedure is presented in Table A.1 and Table A.2 on the following pages.

2.2 Responsibility for Project Screening

In order to ensure that screening decisions are taken quickly and efficiently, project screening should be undertaken as near to the point of project origin and as early in the project cycle as possible. Thus, wherever possible, project screening should be undertaken by a relevant Government agency (either at the Central or Zonal level) responsible for regulation, development, implementation, management and/or supervision of a particular development project. The Department of Environment (or its zonal branch offices) will give advice to the project screening process whenever required.

If, for any reason, no relevant Government agency exists for a particular project, then project screening should be completed by the Department of Environment (or its zonal branch offices), on behalf of another Government agency or Project Owner. The Department of Environment (or its zonal branch offices) will provide advice on screening decisions to any other Government agency.

Figure 1 Flowchart for Overall Environmental Assessment

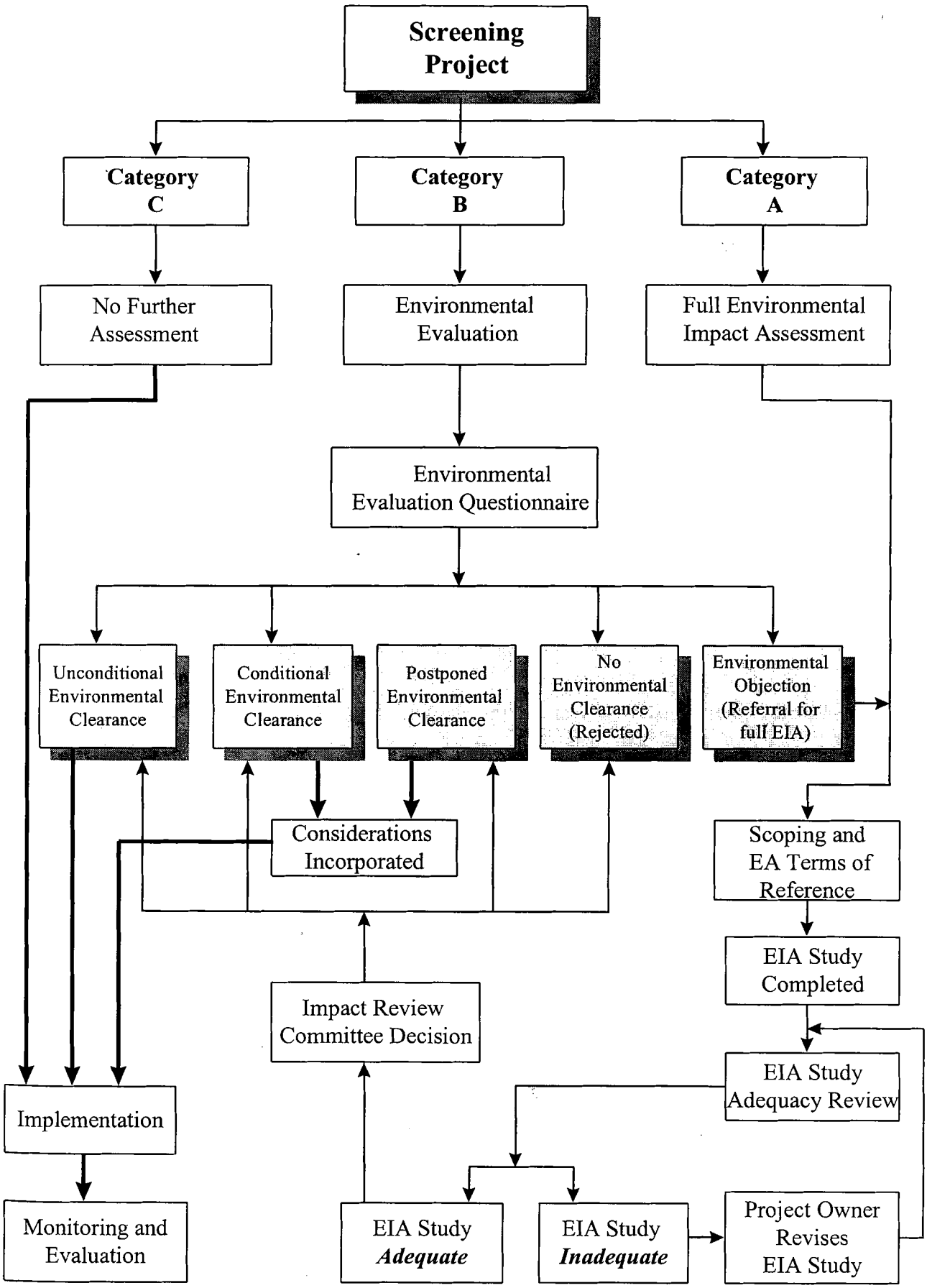


Table A.1 Procedural Rules for Project Screening

Step 1 Use the project list contained in Appendix A to determine the project type and column to which the proposed project belongs. Take care to check the scale of the proposed project against any thresholds which may occur on the list to identify the correct column for a proposed project of this scale.

Step 2 Check the project location against the Environmentally Sensitive Areas (ESA) described in Appendix B. If the project overlaps with, or is within 10 km of an ESA, then record the type of ESA with which overlap occurs (for example forestry, mining concession, cultural heritage site).

Attempts have been made to include some of the major ESA of Eritrea, but given the extent and diversity ESA of the country, the proposed ESA guideline provided in Appendix B are not deemed sufficient and further consultation should be made with the relevant Government institutions during the Project Screening Process.

Step 3 Either

- consult the line ministry responsible for the ESA type – they must be involved in the final screening decision;

Or

- ask the Project Owner to relocate the project away from the ESA before proceeding with screening;

Or

- upgrade the original screening category by one grade (that is from C --> B, or from B --> A)

Step 4 Decide the final category to which the proposed project belongs. Use Table A.2 to help determine the level of environmental assessment required.

Step 5 Record the decision-making process on the Project Screening Form (DoE/PSF) contained in Appendix C, copies of which should be sent to the Department of Environment or its zonal branch offices.

Table A.2 The Project Screening Decision Rules

Rule 1 No further environmental assessment is required for any proposed project which

- is included in Column III of Appendix A and does not lie within 10 km of an ESA as defined in Appendix B;

These projects should be referred to as Category C projects.

Rule 2 An EE must be completed for any proposed project which

- is included in Column II of Appendix A; or
- is included in Column III, but lies within 10 km of an ESA as marked and as defined in Appendix B and is recommended for upgrading by the line ministry responsible for the ESA category;
- a new project type which does not appear in Appendix A at all;

These projects should be referred to as Category B projects.

Rule 3 An EIA must be completed for any proposed project which is:

- included in Column I of Appendix A or
- included in Column II, but lies within 10 km of an ESA, as defined in Appendix B; and is recommended for upgrading by the line ministry responsible for the ESA category.

The projects should be refereed to as Category A projects.

2.3 Outcomes of the Project Screening Process

The objective of project screening is to assign projects correctly into one of three options in the overall environmental assessment process.

2.3.1 Category A Projects

Projects which, because of their type, size, location, and/or mode of operation are:

- likely to lead to a diverse range of significant negative environmental impacts and which are not easily predicted and assessed using existing information, and thus require full EIA before project environmental clearance can be considered.

2.3.2 Category B Projects

Projects which, because of their type, size, location, and/or mode of operation:

- could lead to significant negative environmental impacts if not carefully designed and implemented, but whose impacts can usually be reduced to an acceptable level through use of existing, appropriate design standards and mitigation measures; or
- for which insufficient information exists to be able to make a definitive decision about likely environmental impacts.

2.3.3 Category C Projects

Projects which, after preliminary screening, are considered unlikely to have significant environmental impacts, and which require no further environmental analysis before consideration for approval via the normal licensing procedures.

The procedures for environmental assessment of Category C, B and Category A projects are given in Sections 3, 4 and 5 respectively.

Chapter 3 Category C Projects

3.1 Clearance of Category C Projects

Category C projects are defined as those projects which, by nature of their type, size, mode of operation and/or location are considered to have minimal or no negative environmental impacts and thus require no further environmental assessment beyond screening, and hence get implemented without any further delay.

In practice, it is almost impossible for a project not to have any impact on the environment. Should any doubt exist about potential impact, a project should be screened into Category B rather than Category C, thus ensuring that the project undergoes an environmental evaluation using an appropriate questionnaire. This precautionary principle is reflected in the relatively small number of projects which have been placed in Column III (Category C) of Appendix A.

In addition to the project types already included in the Project Screening List, the following types of project may be considered to be candidates for screening into Category C, especially if:

- the project requires little or no physical intervention in the environment;
- projects of a similar type have been implemented under similar conditions in Eritrea within the past 5 years with no known negative environmental impacts.

Chapter 4 Category B Projects

4.1 Environmental Evaluation of Category B Projects

Proposed projects which are placed in Category B during Project Screening must be subjected to an Environmental Evaluation (EE) before environmental clearance can be granted for a project. It is an important assumption of the Category B project type that the potential environmental impacts associated with the project type are:

- predictable on the basis of (international and/or national) prior experience;
- capable of avoidance or mitigation through well-understood design and management principles; thus
- **overall** environmental impacts should be relatively small-scale if the project is well designed.

4.2 Timing of Environmental Evaluation

Environmental Evaluation of a project proposal should take place as soon as possible after the screening process itself. It is, however, important that sufficient detail about the design of the project is available for meaningful assessment to be made. Wherever possible, an environmental evaluation should be completed using existing information and expertise — additional data should only be required when significant potential for negative impact is discovered during the evaluation itself.

4.3 Responsibility for Environmental Evaluation

Environmental Evaluation of a project should be carried out by the Project Owner in collaboration with the relevant Government agency (either at the Central or Zonal level). Wherever possible and as appropriate, consultation with any other potentially affected party (stakeholders) should take place as part of the evaluation exercise, and the Department of Environment (or its zonal branch offices) should give advice to the evaluation process whenever required.

Environmental Evaluation should include completion of an Environmental Evaluation Questionnaire (EEQ) which will guide the Project Owner in providing the appropriate information required for environmental assessment.

For category B projects listed down in Appendix A, EEQs have been made ready and could be found from the Department of Environment (or its zonal branch offices) or any other concerned Government institution.

Where no EEQ exists, the Department of Environment will co-ordinate preparation of a suitable questionnaire or the preparation of an appropriate alternative form of environmental evaluation report.

The EEQ, plus any other supplementary information, forms the basis of an Environmental Evaluation Report (EER). An EER need not be as comprehensive a document as a full Environmental Impact Assessment report for category A projects, but should cover all relevant issues. In some sectors, where EEQs have been developed, the EER can be little more than the completed answers to the EE questions.

4.4 Results of Environmental Evaluation

There are four possible decisions which the responsible implementing Government agency has to make about environmental clearance after the evaluation exercise. These are listed below.

1 *Unconditional Environmental Clearance*

The evaluation exercise has identified no environmental reasons for delaying project approval, hence environmental clearance is automatically granted for project implementation.

2 *Conditional Environmental Clearance*

The evaluation exercise has identified some potential negative impacts but these can be mitigated. If the Project Owner adopts the recommended conditions, environmental clearance can be granted.

3 *Environmental Objections (Referral for full EIA)*

The evaluation exercise has revealed either significant potential negative impacts, or a significant lack of knowledge about potential impacts – the proposed project should undergo a full EIA.

4 *No Environmental Clearance*

The proposed project is clearly incompatible with existing (environmental) policy and cannot be granted environmental clearance in its present form. The project is fully disqualified.

Overall, project approval should be dependent upon completion of the environmental evaluation and production of an EER by the Project Owner in collaboration with the relevant Government agency. The EER need not be more than a short description of the proposed project and a record of the completed answers to the questionnaire

completed for the evaluation. The relevant Government agency then completes an Environmental Evaluation Clearance Form (DoE/EECF) which records the decision taken in the light of the evaluation. Copies of the completed EER and EECF forms should be forwarded to the Department of Environment (or its zonal branch offices, as appropriate), who is responsible for ensuring that all evaluations are completed to an appropriate standard.

If a Category B project has been recommended for environmental clearance on the EECF, then environmental clearance is automatic, unless a written disagreement is submitted by the Department of Environment (or its zonal branch offices, as appropriate), within 10 working days of receipt of the EECF.

In the event of a disagreement over clearance, a further round of consultation between the Department of Environment (or its zonal branch offices) and all stakeholders should take place, in order to resolve any differences of opinion over environmental clearance before a modified EECF decision is recorded.

4.5 Environmental Evaluation Procedures

The procedural steps for environmental evaluation of category B Projects are given in Table A.2 next page.

Table A.2 Procedural Steps for Environmental Evaluation

Step 1 Project is screened into Category B (using project screening list in Appendix A of these procedures) by relevant Government agency.

Step 2 Project Owner and/or relevant Government agency requests questionnaire from Department of Environment or its zonal branch offices. At this stage, the Department of Environment and both the Project Owner and relevant Government agency should collaborate on a review of the suitability of the questionnaire for the proposed project and improve questions as appropriate.

Step 3 Project Owner and relevant Government agency evaluate project by completing the questionnaire. Significant gaps in the questionnaire responses are filled through wider consultation with relevant stakeholders, information sources, etc.. This should include all relevant ministries, for example Department of Land over suitability of location with respect to land use zoning.

Step 4 Relevant Government agency completes Form DoE/EECF, which records the decision taken in light of the evaluation, and submits immediately copies of the completed forms to the Department of Environment or its zonal branch offices along with copies of completed EE Report (that is questionnaire responses) plus any other relevant reports/materials for public record and considerations.

If a project is recommended for environmental clearance, then environmental clearance is automatic, unless a written disagreement is submitted by the Department of Environment or its zonal branch offices within 10 working days of receipt of a decision(Form DOE/EECF); alternatively, project EIA begins.

Step 5 After a questionnaire has been used to carry out ten evaluations in a sector, or after two years have passed, the Department of Environment or its zonal branch offices should review the questionnaire in the light of completed evaluations and, where necessary, prepare new sectoral questionnaires.

Chapter 5 Category A Projects

5.1 Full Environmental Impact Assessment

Proposed projects which are placed in Category A during Project Screening must be subjected to full Environmental Impact Assessment (EIA) before environmental clearance can be granted. A flowchart of the entire EIA process is given in Figure 2 and further elaboration on the EIA is provided hereafter.

5.2 Timing of full EIA

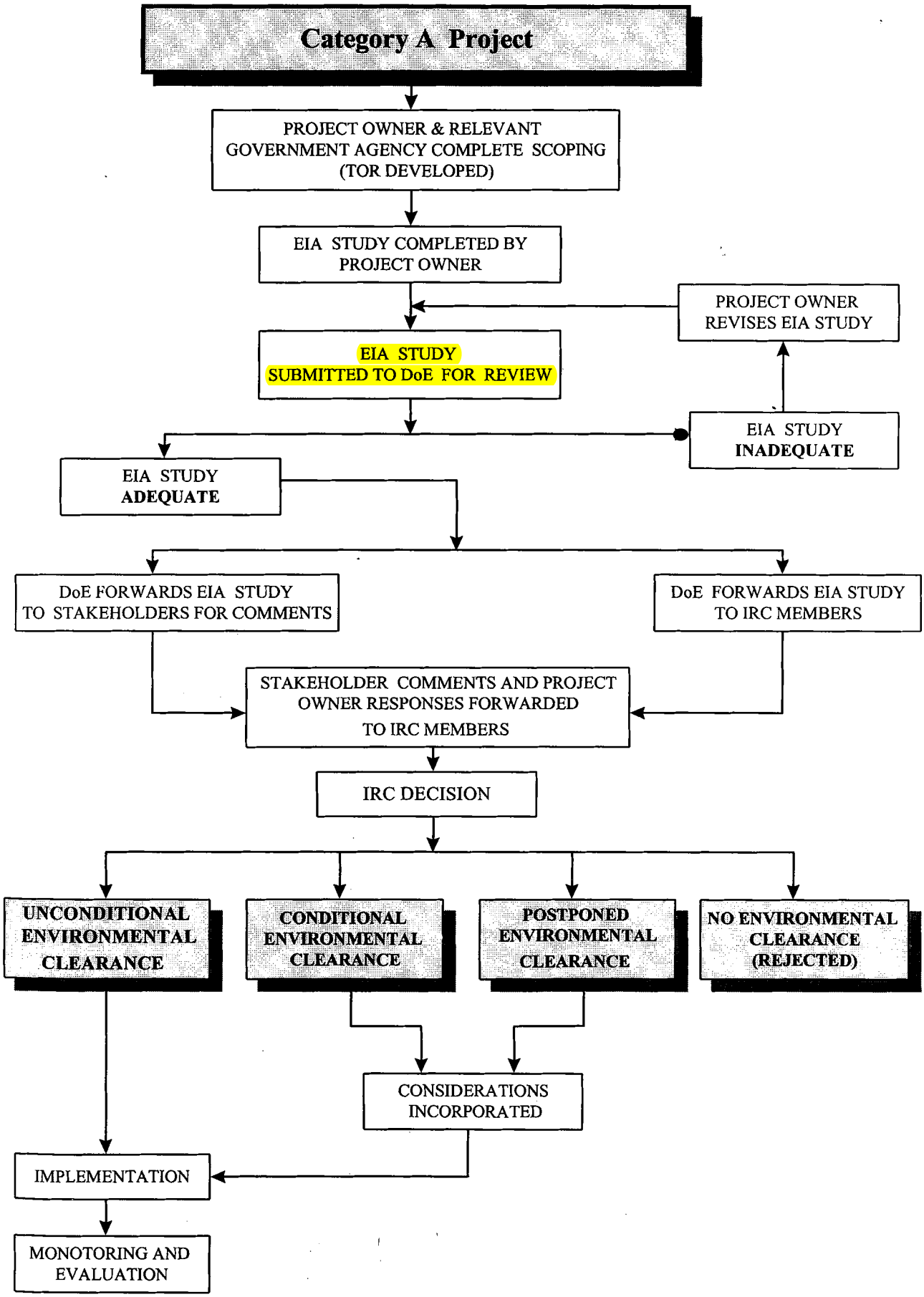
A full EIA study will run in parallel with other components of the project cycle, reducing unnecessary delays to project implementation. The first stage of the full EIA, project scoping, should take place as early as possible. The timing of subsequent stages in the EIA will, to a large extent, be determined by the results of the scoping exercise.

5.3 Responsibility for Full EIA

Completion of the EIA is the responsibility of the Project Owner, but will be co-ordinated by the Department of Environment.

The financial cost of the EIA will be borne by the Project Owner, including the cost of additional work completed by Eritrean Government officials which contribute to the assessment itself, for example, through the completion of local public consultation, etc.

Figure 2 Flowchart for full Environmental Impact Assessment



5.4 Steps in the Full EIA Procedures

The whole EIA process is continuous, but may be broken down into a number of steps, each defined by the achievement of a set of objectives represented by formal documents which require approval or must be filed with the Department of Environment - this provides an element of "quality control" and allows for monitoring of the overall process.

Table A.3 The Major Stages of an EIA Study

EIA Procedural Step	Visible Output
Step 1 Scoping to produce Terms of Reference	Agreed Terms of Reference (ToR) for EIA Study;
Step 2 Environmental Impact Assessment Study	Environmental Impact Assessment report; and Draft Environmental Management Plan (EMP);
Step 3 EIA Adequacy Review	Decision on adequacy of EIA report and draft EMP;
Step 4 Stakeholder Consultation	Written comments on EIA report and draft EMP
Step 5 Impact Review Committee(IRC) Decision	IRC Decision Report

5.5 Scoping for EIA

Scoping is the first stage in the overall EIA process, which should be viewed as continuous and interactive. However, scoping does have a fairly clear starting point:

- categorisation of a project as Category A ;

and a defined end point:

- the agreed ToR for the EIA study itself.

Between these points, the major steps shown in Table A.4 should be followed in order to ensure that scoping is completed to an adequate standard.

Table A.4 Procedural Steps for Project Scoping

Step 1 The Project Owner and the relevant Government agency review existing project information, as detailed in existing proposal and other documents, and agree on a preliminary list of potentially significant impacts to be considered in the assessment, along with a provisional list of relevant alternatives to be considered, using scoping checklist in Appendix D. This step ensures that sufficient detail about the project is available for meaningful involvement of stakeholders;

Step 2 The Project Owner and relevant Government agency agree on a list of stakeholders, the mechanisms by which the identified stakeholders will be consulted during the scoping process;

Step 3 Stakeholder consultation should include a visit to the project location and potential impact zone by the Project Owner, plus the Department of Environment and/or individuals with appropriate skills for accessing local knowledge in the area, through interviews, questionnaires, PRA, etc.;

Step 4 Review of stakeholder inputs; i.e. incorporation of stakeholder opinions and concerns into the list of potentially significant impacts/issues and any additional realistic project alternatives to be considered in the assessment;

Step 5 Completion of a Project Scoping Report for the public record, and the start of EIA study;

The Project Scoping Report should contain a record of the scoping process which was undertaken. The report should document the manner in which the preceding steps were completed, and should include details of all stakeholders involved, summaries of the outcome of the consultations with stakeholders, records of site visits, etc. A copy of the scoping report should be delivered to the the Department of Environment and copies of the report should be available to the IRC when the EIAs report and draft EMP are reviewed.

Step 6 The Project Owner and relevant Government agency prepare and agree terms of reference for the EIA study (see section 5.6).

5.6 Preparation of Terms of Reference for EIA Studies

An important part of the scoping process is the production of agreed terms of reference for the EIA study.

Terms of reference are required to ensure that:

- the overall EIA study is defined and structured before it begins;
- specific activities and responsibilities are assigned before the study begins;
- the study will be completed according to an agreed timetable compatible with the overall proposed project cycle;
- due emphasis is placed on potentially significant adverse impacts, analysis of alternatives and opportunities for mitigation;
- appropriate consultation/participation of stakeholders takes place during the study period; and
- the Project Owner is aware of the (i) reporting requirements and (ii) review procedures which will follow submission of the reports.

Preparation of the terms of reference should be a collaboration between the Project Owner and the relevant Government agency. In most cases, the Project Owner may produce draft terms of reference based on the scoping exercise and the guidelines below. The relevant Government agency must approve these before a contract for the EIA study is agreed and signed. Alternatively, the relevant Government agency can draft the terms of reference for agreement by the Project Owner

The terms of reference should contain the following general headings and sections:

5.6.1 Introduction and Objectives

These explain the purpose of the terms of reference in relation to the named project proposal and give a brief background description of the project.

5.6.2 Background Information

Where it is felt that some additional background information is required to ensure that the rest of the terms of reference are easily understood, then this should be provided at

this point. If sufficient information is already available within the project proposal, then this section can be omitted and reference made to any relevant project document instead.

5.6.3 Legal Requirements for Environmental Assessment

Where clear legislative/administrative regulations and guidelines will apply to the EIA, then these should be clearly identified in this section, including reference to existing legislation, national EIA and sectoral EIA guidelines, etc. (copies of relevant documents should be appended to the terms of reference, or provided to the study team separately before the EIA study begins).

5.6.4 Specific Issues to be Addressed in the EIA Study

Some preliminary discussions about the specific issues to be addressed and the methodology of the study should have.taken place during the scoping exercise. These should provide the basis for defining the detailed parts of the terms of reference, which should include at least:

5.6.4.1 Baseline Description of Environment

- definition of the requirements for baseline description of the present and future project environment (physical and socio-economic);

5.6.4.2 Analysis of Alternatives

- a list of the project alternatives to be assessed as part of the study;
- for each alternative, a list of project activities to be assessed for significance of any potential negative impacts with respect to identified environmental components;
- for each impact with potentially significant negative impact, an assessment of the area, scale, duration, frequency and probability of occurrence of the impact and the actions which might be taken to mitigate negative impacts;
- a justification of the preferred alternative on the basis of environmental impact, but paying due attention to economic and engineering constraints and opportunities;
- development of a draft EMP to mitigate negative impacts and to monitor effectiveness of mitigation for the preferred alternative.

The exact methodology to be used can be left to the Project Owner and the study team, but should be discussed fully during scoping.

5.6.5 Consultation and Public Participation

Where local communities are important stakeholders, either as interested or affected parties, the terms of reference should clearly set out the extent of, and methodology for, public consultation throughout the assessment study and its review;

5.6.6 Requirements for Report Production

A description of the requirements for production of interim reports and review sessions, including feedback of information to stakeholders; and a description of the requirements for report production at the end of the study period. This section should also define requirements for translation of reports into appropriate local languages.

5.6.7 Responsibilities

This refers to clear designation of responsibilities for both the EIA study itself and for co-ordination of the study within Eritrea. In most cases, responsibility for completing and financing the assessment lies with the Project Owner, whilst the co-ordination role will be the responsibility of the Department of Environment.

5.6.8 Composition of the Study Team

A description of the minimum qualifications/expertise which the study team should contain; e.g. for a large irrigation project: hydrological engineer/hydrologist, agriculturist, ecologist, socio-economist, health specialist; the composition of the study team should be adequate to address, i.e. assess the significance of and propose mitigation for the potential impacts identified in the scoping exercise and described in the terms of reference. The team should be adequately balanced to be able to accommodate gender, cultural and ethnicity issues where appropriate.

The relevant Government agency for the EIA should ensure that the curriculum vitae of all study team members have been approved before the study begins, and that a procedure for approval of substitutes is put in place; and must also make an assessment of the impartiality and objectivity of the proposed study team.

5.6.9 Time Schedule and Programme

The overall time allowed for the impact assessment study and for production of any interim reports, plus the EIA report and EMP must be agreed upon, and description of specific tasks and completion dates should be included in this section wherever possible.

5.6.10 Budget

The agreed budget and source(s) of funding for the study and report production should be included in the terms of reference, including any allocation of funds to specific activities which might be completed by government staff, i.e. baseline socio-economic or biodiversity surveys, should be given in this section.

5.6.11 Contingency for Changes in The Terms of Reference

Even when a successful scoping exercise has been completed, it is possible that changing circumstances may require that the terms of reference be modified due to a change in project design, or a delay in implementation, etc.. It is important to agree a notification procedure for any modification to terms of reference which might originate from the Project Owner, or from the relevant Government agency.

5.6.12 Contingency for Failure to Conform with Terms of Reference

In the event that either party (Project Owner or relevant Government agency) fails to comply with the study requirements, as laid out in the terms of reference and associated EIA procedures, then a mechanism for renegotiation/termination of the study, with some mechanism for costs recovery, should be agreed within the terms of reference.

5.6.13 Appendices to the Terms of Reference

The scoping report and any other relevant legislation, along with the EIA procedures should be attached to the terms of reference as appendices, or made available to the Project Owner separately.

5.7 EIA Study

The full EIA study process requires that two separate outputs be produced by the Project Owner:

- an EIA report , and
- an Environmental Management Plan (EMP).

The review stage of the environmental assessment process can only begin when a completed, final version of the EIA report has been submitted, along with a draft EMP. These could be bound in the same document or presented as two separate reports.

Acceptance of the final EIA report is a pre-condition for environmental clearance and recommendation of a project for approval. A further condition of final project approval will be revision/completion of the draft EMP, taking into consideration any recommendations for project redesign and appropriate mitigation and monitoring made by the Impact Review Committee(IRC), whose selection process is coordinated by the Department of Environment (for details see Section 5.13, 5.14 and 5.15).

In order to be accepted, the EIA report and EMP must contain sufficient detail to allow the IRC to arrive at a clear recommendation with regard to environmental clearance and project approval. The EMP must also contain specified mitigation and monitoring proposals. These provide the basis of binding environmental management terms, and project approval will be conditional upon a commitment by the Project Owner to implement the EMP.

5.8 EIA Report Requirements

Each completed EIA report should contain, as a minimum and where appropriate, the following sections.

5.8.1 Cover Page

The function of the cover page is to clearly display the most important descriptive information about a project. It should include, as a minimum: Project Name; Name of Project Owner and his full address, Report Name (that is Draft/Final) and its reference number; Name and Contact Address of Producer of Report; relevant Government agency; Date of Report Submission.

5.8.2 Executive Summary

The executive summary should present the main findings and recommendations of the study, including the nature of the proposed project, the alternatives considered, the main impacts identified, assessment of their significance, the final evaluation of alternative designs, and overall recommendations.

The executive summary often represents the only information about a project assessment which will be circulated widely and read by more than the IRC. It should, therefore, be a "stand-alone" document, written in clear, concise, non-technical language; and normally should not be more than 10 pages long, or conversely around 10% of the overall report size. The executive summary should be translated into appropriate local languages.

5.8.3 Contents Page

The contents page is a quick reference guide to the rest of the report, enabling a reader quickly to locate different sections of the overall report; all pages in the report should be adequately numbered.

One contents section should provide page numbers for the following:

- Major sections (chapters) and sub-sections of the report;

Separate, additional contents sections should provide page numbers for the following:

- Tables
- Figures (including maps);
- Appendices (Annex).

5.8.4 Terms of Reference

The agreed terms of reference for the study should be reproduced in full in the EIA report, preferably as an Annexe.

5.8.5 Introduction

The introduction should provide a background both to the proposed project and to the assessment study, and should describe, in general terms, the methodology adopted for the study.

The following elements should be included:

- Brief history of the project to date;
- Background information;

- An outline of the project proposal as laid out in the original project brief (objectives, location, proposed actions, life-span of project, including construction, operation and decommissioning stages where appropriate) and reference to where more complete project description can be found;
- An outline of the methods which have been used for data collection and interpretation in the study.

5.8.6 Administrative, Policy and Legal Requirements

This section should include a review of the relevant administrative and planning procedures or legislation which might influence the project during development, together with an indication of how compliance (where required) will be achieved. Only the relevant aspects of administrative, policy and legal requirements should be presented and discussed in the main body of the report; if it is necessary to include entire sections of complex documents, these should be included in a separate Appendix(Annex).

5.8.7 Consideration of Alternatives: Proposed Actions, Affected Environment and Assessment of Impact Significance

The main part of the report should be the assessment of significant environmental impacts for each of the different alternatives identified by the scoping exercise.

For each of the identified alternatives, the following components should be addressed:

- Project description, especially with regard to the "sources" of impacts.

  This project description should build on the non-technical description of the overall project given in the Introduction, and should identify and highlight the specific project activities from which potential environmental impacts may arise.

  The significant impacts to be covered in the assessment should have been identified during Scoping; the Checklist of Project Activities contained in Appendix D may be used by the study team to ensure that all relevant activities have been incorporated.

- Description of potential impacts within the affected environment (for example the impact zone of the project).

This analysis is best achieved by identifying the specific components of the environment which are likely be adversely affected by the project activities identified above; the Checklist of Environmental Components given in Appendix D may be used by the study team to ensure that all relevant environmental attributes have been considered.

- Assessment of impact significance.

Assessment of impact significance lies at the heart of all impact studies. Wherever possible, assessment of impact significance should be based on objective data. Where this is not possible, use should be made of appropriate modelling techniques or other forms of statistical analysis. The exact methods to be applied in assessment of impact significance are left open to the study teams but should be fully discussed during the scoping exercise. Details of mitigation and environmental management actions , etc. must be presented in the EMP [see section 5.9 - 5.10], and should not be duplicated unnecessarily here.

5.8.8 Evaluation of Alternatives

Following presentation and assessment of the significant environmental impacts of each alternative, the report should integrate this information so as to arrive at a single, preferred project option, along with a justification for this choice. This section may include a justification for any alternatives already considered and rejected prior to submission of the original project proposal. The evaluation of alternatives could be summarised in the form of a table or matrix.

5.8.9 Conclusions and Recommendations

The conclusions and recommendations arising from the assessment process form one of the most important parts of the overall report. This section should highlight those environmental issues which are likely to play a major role in final decision-making about clearance and approval of the project, and should include:

- a brief review of key issues;
- an indication of all major positive and negative impacts and possible mitigation/optimisation measures, or reference to mitigation summary table(s) for each alternative;
- a statement of adverse impacts which cannot be avoided or mitigated;

- a statement of any serious residual risk associated with the project in general, or with each alternative;
- a final recommendation of the preferred alternative;
- a summary of management and monitoring activities which need to be incorporated into the EMP for the preferred alternative.

In addition to the above, the EIA report should also contain the following sections to promote easy use and analysis of the report:

5.8.10 Definitions of Technical Terms and Acronyms

A glossary of acronyms and technical terms explained in simple language should be presented. This can help to broaden the range of people able to make use of the report as a source of information.

5.8.11 Study Team

EIA reports are almost always completed by multi-disciplinary teams, assembled and co-ordinated by the Project Owner. In order to facilitate any requests for clarification or additional information, the Project Owner should include a list of those involved in the different components of the study. The following minimum details should be provided for each contributor: name; qualifications/field(s) of expertise/professional affiliations; current position; contribution to the overall study and report; contact details.

5.8.12 References and Contacts (Persons and Institutions)

A full bibliography of the resources used in the assessment study and the final report should be included, preferably in one location at the end of the report, rather than at the end of individual sections. Bibliographic references should always include mention of the physical location of a copy of each reference cited, in order to facilitate any verification which may be required during the review of the report. Where unpublished information, or opinions of individuals or groups have been used in the assessment, the name(s) and professional occupation/expertise of those individuals should be included in the text, or as a footnote.

5.8.13 Appendices (Annex)

Appendices should contain additional material which, although relevant to the overall assessment, might reduce the overall "flow" of the main report. This kind of additional, technical information is better presented as separate appendices, either at the end of the main report, or as a separate bound document. All appendices should be referenced clearly in the text of the main report wherever appropriate. Examples of the kind of information which might be included as appendices are:

- Planning proposals, policy guidelines and development programmes relevant to the project under assessment;
- Maps, drawings, etc. containing background information;
- The initial scoping report used to determine the terms of reference of the study;
- Records of all public consultations; and
- Technical and specialist (background) reports prepared as part of the overall EIA study/project.

Although this is a recommended and preferred structure for an EIA report, not all environmental impact assessment studies completed in Eritrea need conform exactly to the format. It is much more important that the report contains:

- a realistic analysis of alternatives;
- a strong focus on the most significant impacts of the proposed project, rather than irrelevant background descriptions;
- the mitigation, monitoring and compliance strategies necessary to ensure that avoidable impacts are adequately and appropriately incorporated into the final project design through an EMP (see section 5.9 on next page).

5.9 Environmental Management Plan (EMP) Requirements

The final EMP should not be completed until after project environmental review. This is because the final EMP must incorporate any additional changes in project design, mitigation measures and/or monitoring which might be recommended by the IRC and agreed as a condition of environmental clearance and overall project approval.

It is essential, however, that a project owner prepares a draft EMP, as part of the overall environmental assessment process, in order to demonstrate that long-term environmental management responsibilities have been considered.

The draft EMP will contain specific activities which have been identified by the Project Owner as necessary to ensure that any environmental damage is reduced to acceptable levels. Some of these activities will have been part of the original proposal, some will have been added during the environmental assessment process; yet others may be required by the IRC as a condition for project approval. The final EMP should incorporate all of these measures.

The draft EMP should include all types of activities which might be proposed as mitigation for different impacts of the overall project; this may include any of the following:

- ***Avoidance***: avoiding the impact altogether by not implementing certain activities or parts of a proposed project;
- ***Minimisation***: minimising impacts by limiting the degree, magnitude or extent of an activity or part of a project;
- ***Reduction***: reducing, or eliminating the impact of an activity or a part of a project through preservation and maintenance operations undertaken during the lifetime of a project;
- ***Correction***: correcting or rectifying the impact of a project activity by restoration, repair or rehabilitation of the affected environment;
- ***Compensation***: compensating for an impact arising from a project activity by replacing lost or damaged environmental components, either in kind or by replacement with (agreed) substitute resources.

The structure of an EMP must be simple. It must contain a set of activities, belonging to the five categories outlined above, which will be undertaken in order to ensure that identified environmental impacts arising from project implementation are kept to acceptable levels in a cost-effective manner.

5.10 Content of EMP

An EMP should, as a minimum, contain the following components:

5.10.1 Brief Description of the Project

This can be the same as contained in the environmental assessment report, but must be included so that the EMP is a free-standing document, capable of being read and understood by anyone involved in project monitoring.

5.10.2 Summary List of Impacts for Which Mitigation is Proposed

If a summary matrix of impacts has been used in the EIA report, then this could be used as a basis for the components outlined below.

5.10.3 Details of Specific Mitigation Activities/Actions and Responsibilities

The summary list should be followed by a more detailed account of the physical and organisational components of the mitigation measure(s) proposed for each impact, including:

- The mitigation activities to be undertaken, (including methods of prevention, minimisation of impacts, repair/rehabilitation of damage, compensation in kind or other resources);
- Who will be responsible for implementation of each mitigation activity, and under what sort of contractual obligation (named individuals in named positions in responsible organisations, in order to maximise transparency and accountability and to simplify monitoring);
- The timeframe over which mitigation will be implemented (for example construction only, operation, etc.);
- The predicted/expected effect of each mitigation activity;
- The area over which the mitigation will be implemented and over which its impacts will be effective (that is will the mitigation measures reduce the negative effects of an impact over the entire impact zone or not; this is particularly important for transparency in compensation schemes);

- An estimate of mitigation costs;
- An indication of the likely effectiveness of mitigation (e.g. assumptions about reliability of funding, external factors likely to undermine the effect of mitigation, institutional feasibility, changes in control and organisation which might be needed for, or influence successful mitigation);
- A review of residual and unmitigable impacts;
- Details of the agency responsible for monitoring, the methodologies to be used for monitoring of potential negative impacts, the effectiveness of mitigation and the source of funding for monitoring.
- Detail of the agency responsible for taking action in the event of non-compliance and the procedures to be activated in the event that monitoring reveals a failure of mitigation and/or unacceptable negative impacts arising even with full mitigation.
- The specific mitigation measures described above need to be integrated into a coherent environmental management programme, describing the overall responsibilities for, and timing of implementation of mitigation activities during the lifecycle of the project.

5.11 Review of EIA Report and EMP

Review of EIA report and draft EMP has two important components:

- Review of the adequacy of the coverage and completeness of the report/plan; this aspect of review assesses the adequacy of the report/plan to be used by the IRC as a basis for the more technical review of significance of impacts and appropriate mitigation and/or selection of alternatives, etc.
- Review, by the IRC, of the technical information about impacts and mitigation contained in the report in order to arrive at a recommendation regarding environmental clearance and project approval, taking into consideration alternatives and/or the need for improved design, redesign, mitigation, compensation, etc.

The Department of Environment should be responsible for ensuring that impact reports are assessed against an established set of criteria, so that an adequate and transparent standard for both report coverage and completeness is maintained.
Arrangements for review of the technical content of the report/plan by the IRC should begin only after the report/plans have been approved as adequate in terms of coverage and completeness.

The starting point for the assessment and review process is the terms of reference for the impact study. The agreed terms of reference defines the work to be completed, and thus provide the only fair basis against which the assessment of the adequacy of the report and its technical review can be completed.

5.12 Review of EIA Report and EMP for Coverage and Completeness

Review of the adequacy of coverage and completeness is not concerned directly with the conclusions to be drawn from the information contained in the report; rather it is a rapid process for ensuring that the study has been completed, and the report presented, in a manner which will allow impact significance to be reliably reviewed by the IRC. In other words, it is a filter for completeness which is applied to an EIA Report or draft EMP before it is forwarded to the IRC which must make the final recommendations on environmental clearance.

In order to complete the assessment, five steps must be completed as shown in Table A.5 on the next page. The report sub-components should be assessed using the following criteria:

Adequate The information presented appears to be comprehensive and relevant to the proposed project, and is presented in a manner which will allow impact review to be completed in an efficient manner.

Incomplete The information presented has some gaps, which should be completed as a supplementary response before the impact review process can proceed.

Inadequate Important information is judged to be missing from the report sub-components, or information is not presented in a style which would allow the technical review to proceed easily; this section of the report should undergo extensive revision before review can proceed.

Inappropriate In some cases, a particular sub-component may be inappropriate or not applicable to the type of project being assessed, in which case it should not be reviewed using the other criteria.

In the case of a project sub-component being judged as incomplete or inadequate, the Department of Environment and the relevant Government agency are expected to assist the Project Owner by making suggestions about how the missing information might be obtained and presented in a more effective manner.

Table A. 5 Procedural Steps for Adequacy Review of EIA Report and Draft EMP

Step 1	Identification and location of the specified sub-components of the study, as laid out in the terms of reference, requirements for EIA and draft EMP report preparation: if the report has been produced using the structure proposed in the Procedures, this will be relatively easy. If the report has a different structure, then care must be taken to ensure that all relevant information is located throughout the report before a decision on adequacy is made.
Step 2	Assessment of each of the sub-components for relevance and completeness: it is important to ensure that all the information necessary for a decision to be made on environmental clearance has been provided before the IRC meets. It is important that this assessment be completed by someone with sufficient knowledge of environmental issues to be able to make the assessment, but this is not the technical review.
Step 3	Identification of important omissions/shortcomings in the information presented: where it is clear that there are gaps in the information provided relative to the original terms of reference, then the sub-sections should be marked as incomplete or inadequate.
Step 4	Specification of the additional information which is required: Where information is lacking, the Project Owner should be advised of this and, wherever possible, advice as to how/where this information can be obtained should be provided.
Step 5	Complete adequacy review form and file with Department of Environment EIA database.

A simple form can be used for the preliminary assessment of adequacy; this form should list the project sub-components and contain checkboxes for the result of the assessment.

Sample forms for the assessment of the adequacy of the coverage and completeness of an EIA report or EMP are given in Appendix C. Form DoE/PEIAR covers the EIA report, whilst Form DoE/PEMPR covers the mitigation and monitoring proposals contained in the draft EMP.

When the submitted report and plan are considered to be adequate in terms of coverage and completeness, this should be recorded on the appropriate proforma and the Department of Environment should initiate the process of impact review.

5.13 Project Environmental Impact Review

Although organisation and co-ordination of the impact review, based on the technical content of an EIA report and EMP, is the responsibility of the Department of Environment, the technical review itself is completed by an IRC, the members of which will review the report, both individually and as a group, before making their recommendations.

5.14 Responsibility for Impact Review

The IRC will be convened and co-ordinated by the Department of Environment and will consist of individuals with adequate qualifications appropriate to the particular project being reviewed. The Department of Environment will be responsible for the maintenance of a database of national and international experts who can be called upon to participate in the review process. Similarly, the Department of Environment and the relevant Government institution will be responsible for the identification of appropriate representatives from other stakeholder groups, affected communities, etc.. The IRC meeting will be chaired by the Department of Environment.

5.15 Composition of the IRC

The composition of the IRC will vary with the type, scale and location of the proposed project, but should remain within the following general parameters:
The IRC should comprise not less than 5 and not more than 9 individuals representing the following areas:

- a representative of the Zonal Administration within which the project is located; where the project impacts may occur over a wider area, representation by more than one Zonal Administration may be required;

- one or two suitably qualified representatives from Government agencies identified as stakeholders in the scoping process;
- a qualified social/development expert;
- a professional with appropriate technical qualifications to assess the soundness of the project proposal and its environmental mitigation activities;
- additional members may be included in the Review Committee when this is considered beneficial. They could be selected from the list of stakeholders identified during scoping or other suitably qualified experts included with the agreement of the Project Owner, the appropriate implementing Government agency and the Department of Environment.

Representation by the Project Owner and the relevant implementing Government agency should be considered, because this would allow immediate clarification of specific points arising from the review and a rapid assessment of the feasibility/acceptability of additional mitigation measures which might be proposed by the IRC.

5.16 Timing of Impact Review

It is important that, prior to the convening of the IRC, all stakeholders identified in the scoping process are informed and allowed access to the EIA report and draft EMP. Stakeholders should be encouraged to submit written comments on the report. In situations where local communities are likely to be affected directly by project implementation, it is essential that this consultation takes place at all levels. Comments arising from these consultations should be made available to the Project Owner. The stakeholder comments and any response which the Project Owner makes to these comments should be made available to the IRC before their meeting.

The procedural steps for the Impact Review Process are given in Table A.6 on the next page.

Table A.6 Procedural Steps for Impact Review

Step 1 Project Owner submits final EIA report and draft EMP to the Department of Environment(DoE);

Step 2 DoE and the relevant Government agency completes adequacy review;

Step 3 If the report is found adequate, then the Project Owner is informed of this; if the project is found incomplete or inadequate, then the report is returned to the Project Owner for amendment and re-submission;

Step 4 DoE makes EIA report and draft EMP available, using participatory methods where appropriate, to all stakeholders identified in scoping report, plus any other interested public party (some parts of the report may be considered confidential and could be withheld at the discretion of the DoE);

Step 5 DoE identifies IRC members and submits copies of report to them for review (along with review guidelines); IRC has a maximum of 49 working days to review report;

Step 6 Concurrently, written comments from stakeholders and other public parties must be submitted to the DoE within 21 working days of report adequacy acceptance;

Step 7 DoE forwards all written comments from stakeholders and other public parties to the Project Owner; the Project Owner has 14 days to respond in writing to these comments and submits a response to the DoE, who will then forward the comments to all IRC members at least 7 working days before the IRC Meeting;

Step 8 DoE convenes and chairs IRC Meeting; IRC members must, within 7 days after the meeting, unanimously agree a recommendation category and submit a joint written justification of their decision. The recommendation of the IRC is recorded by the DoE and forwarded to the Project Owner and/or the relevant Government agency.

5.17 Outcome of the Impact Review

The IRC can make one of four possible recommendations. These are:

1 ***Unconditional Environmental Clearance***

The IRC has not identified any potential impacts requiring changes to the project proposal. The recommendation is that there are no environmental reasons why the project should not be approved as proposed, hence environmental clearance is automatically granted for project implementation.

2 ***Conditional Environmental Clearance***

The IRC has identified environmental impacts that should be avoided to further protect the environment. The recommendation is that the project can be granted environmental clearance subject to incorporation of agreed, additional mitigation measures into the final EMP.

3 ***Postponed Environmental Clearance (Environmental Objections)***

The IRC has identified significant impacts that must be avoided to adequately protect the environment. The recommendation is that project approval should be delayed until improved evidence of an ability to mitigate significant adverse impacts have been presented to the IRC; i.e. the project should not be approved until/unless it is extensively redesigned to eliminate existing environmental concerns. Further revision of the EIA report and draft EMP may be needed and the IRC may need to be reconvened to consider the revised reports.

4 ***No Environmental Clearance***

The IRC has identified adverse impacts of sufficient magnitude that the action should not proceed as proposed. The recommendation of the IRC is that the project should not be approved because of a lack of evidence that these significant adverse impacts can be mitigated adequately.

The recommendation of the IRC should be recorded on the Environmental Impact Review Clearance Form (DoE/EIRCF) and forwarded to the Project Owner and the relevant Government agency along with a justification of the decision.

5.18 Incorporation of IRC Recommendations into Revised EMP

Following the review and acceptance of the EIA report by the IRC, the draft EMP may need to be revised to incorporate any additional mitigation activities recommended by the review committee. Final project approval should be conditional upon these changes being made and a revised final EMP being submitted to the Department of Environment for final checking. The amended and approved final EMP becomes the basis for sustainable environmental management of the project during its entire life-span.

5.19 Recommendation for Project Approval

The recommendation of the IRC with regard to environmental clearance, and thus project approval, may not be binding upon the approving authority. Should the approving authority chooses to disregard the IRC recommendation, then it should make a public disclosure to that effect, with a justification of its decision to override the recommendation of the IRC. If the approving authority and/or Project Owner feels that, for any reason, the IRC process has been conducted in an inappropriate manner, then the matter should be referred for arbitration to the Minister of the Ministry of Land Water and Environment..

Environmental clearance, or a failure to receive environmental clearance from the IRC, does not automatically mean that a project will, or will not, be approved and implemented. Environmental considerations are only one of a number of different factors influencing project approval. However, by making the environmental impacts of a proposed project more transparent and by focusing effort on appropriate mitigation, the procedures described above will contribute towards sustainable economic development and the conservation of important natural and cultural diversity in Eritrea.

Section B

Monitoring and Evaluation of Projects

Chapter 6 Monitoring and Evaluation of Projects

6.1 Monitoring and Evaluation

It is almost impossible to fully and accurately predict all environmental impacts which might arise from a project. Even the best impact assessment may fail to identify and mitigate the negative impacts which a project could have on the environment. In addition, no project is implemented in a static environment; other changes in other conditions could lead to negative environmental impacts arising from a project which it would have been impossible to predict at the time of assessment. For these reasons, monitoring and evaluation of a project's environmental impact following approval and implementation is an important part of the overall project cycle. Monitoring of projects is planned to take place at two levels:

(i) Government Level:

The Department of Environment is responsible for the overall monitoring of the effectiveness of the environmental assessment process in Eritrea.

This includes monitoring of approved projects in order:

- to ensure that negative environmental impacts arising from project implementation do not exceed allowable limits;
- to provide lessons learnt from project implementation which can be feedback into the environmental assessment process (via improved questionnaires for Environmental Evaluation and improved scoping procedures for full EIA).
- to provide a link to the post-environmental auditing of projects which will be undertaken by the Department of Environment (or its zonal branch offices) and other relevant Government agencies as part of the overall environmental management programme for Eritrea.

(ii) Project Level :

In recognition of the full integration of environmental management into the emerging Eritrean economy, day-to-day monitoring of environmental performance will be the responsibility of individual Project Owners and managers. To that effect project managers should formulate a minimum set of monitoring requirements as part of the overall business plan. The results of the monitoring will be sent to the Department of Environment or its representatives at agreed intervals. The Department of Environment or any other relevant Government agency has the right to undertake inspection of a project site in order to confirm adherence to monitoring procedures at any time.

6.2 Monitoring of Category C Projects

Category C Projects undergo no further environmental assessment after screening because their potential for negative impact is considered to be small. However, because no formal list of Category C projects exists and project screening is relatively more generous, the Department of Environment (or its zonal branch offices) will undertake post-investment monitoring of a sub-set of all projects screened as Category C, in order to ensure that no significant impacts have developed in the project type. If a project type previously screened as Category C is found to produce significant negative environmental impacts, then it should be added to the project screening list as a Category B project (or even A) when the list is next revised.

6.3 Monitoring of Category B Projects

Category B Projects undergo Environmental Evaluation via a customised questionnaire. In most cases, the responses to the questionnaires could produce a number of recommendations for changes to the original project design which will avoid or minimise negative environmental impacts (Conditional Environmental Clearance). These recommendations make up an informal Environmental Management Plan and can be used as the basis for monitoring of potential negative environmental impact. Monitoring of Category B Projects is completed by the Department of Environment (or its zonal branch offices) and/or other relevant Government agency as appropriate, either by direct inspection or through design of a monitoring programme which can be implemented by the Project Owner. All monitoring reports should finally be forwarded to the Department of Environment or its zonal branch offices.

6.4 Monitoring of Category A Projects

Category A projects undergo a full EIA, and monitoring and evaluation are an important part of the EMP which must be produced by the Project Owner and approved by the IRC. The EMP is an integral part of the entire project design and monitoring of EMP implementation is a part of the normal project cycle, not a separate component.

Within the EMP (see section 5.10.3), the impacts for which mitigation is required will have been clearly identified, along with the proposed mitigation activity. In addition, the responsibilities for monitoring of mitigation will have been allocated; thus the EMP must contain sections outlining:

- Details of the Government agency responsible for monitoring, the methodologies to be used for monitoring of potential negative impacts and the effectiveness of mitigation;

- Details of the Government agency responsible for taking action in the event of non-compliance by the Project Owner and the procedures to be activated in the event that monitoring reveals a failure of mitigation and/or unacceptable negative impacts arising even with full mitigation.

It should, however, be understood that the Department of Environment is responsible for co-ordinating all efforts of monitoring of mitigation activities.

Appendices

APPENDIX A Project List for Environmental Screening

The Tables below contain lists of typical projects, arranged by sector, which is to be used for project screening. The following criteria were used to separate the projects into three levels of environmental assessment:

- the likely size and scale of the project in terms of area of potential impact;
- the potential for direct/indirect hazardous effect on human health and/or ecosystem integrity;
- the "novelty" of the project, in terms of the ability to learn from past examples;
- whether the project type is likely to be implemented in Eritrea in the near future (probably ten years).

1. Planning Sector Projects

Table 1 Project Type 1.1 Urban Planning

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
		a) land use plans	environmental considerations must be an integral part of the planning process, not a separate activity
b) designation of new towns, settlements, and residential areas of >1,000 families	b) designation of residential areas for < 1,000 families		
c) establishment of industrial estates of >10,000 sq. m	c) establishment of industrial estates of <10,000 sq. m.		
d) establishment of areas for manufacturing and small-scale industry areas which contain "polluting" operations	d) establishment of areas for manufacturing and small-scale industry areas not containing "polluting" operations		"Polluting" operations means any one of a prescribed list of industrial operations to be determined
e) establishment or expansion of recreational facilities, with capacity of >10,000 persons	e) establishment or expansion of recreational facilities with capacity of <10,000 persons		including parks, zoos, botanical gardens, sports facilities and stadia
f) shopping centres, complexes and commercial storage areas with area > 5,000 sq. m.	f) shopping centres, complexes and commercial storage areas with area < 5,000 sq. m.		
	g) social infrastructure, including hospitals, schools, fire stations		
h) tourist hotels with *** rating or higher, or with > 50 rooms	h) tourist hotels with less than *** rating, or with < 50 rooms		*** = Three star

Table 1 (continued) Project Type 1.1 — Urban Planning

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
i) all marine tourism activities involving coral reef diving	i) tourism-related infrastructure, including parks, waterfront developments, marinas, etc.		
		j) Construction of small-scale education and/or health facilities	

Table 2 Project Type 1.2 — Transportation

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) all primary and secondary roads *			refer notes in the next page
	b) all tertiary roads ** i.e. feeder and rural roads		refer notes in the next page
	c) all roads in protected areas		
	d) all bridges over 10m in length	d) All bridge under 10m. in length	
e) railway lines			
f) airports and airfields			
	g) all pipelines over 2 km in length or greater than 10 cm. diameter (see also 11a)	g) all pipelines less than 2 km in length or less than 10 cm. diameter (see also 11a)	
h) ports and landing sites for shipping of >100 tonnes (empty weight)			

Table 3 Project Type 1.3 — Waste disposal

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) sites for solid waste disposal for >10,000 population	a) sites for solid waste disposal for <10,000 population		
b) sites for hazardous waste disposal			
c) sewage disposal works for >10,000 population	c) sewage disposal works for <10,000 population		

Notes for the priority classification of roads [1]

* **PRIMARY ROADS** : are roads handling a significant part of traffic. They have an international role, they generally start from the Capital, Asmara, and are terminating at border points or at ports of the country. Some of them have a regional(international) significance in the Horn of Africa.

Exception to the above definitions are the Assab - Burie and the Gahtelay - Karora road which make part of the primary network, while not starting from Asmara, because of their economic and regional (international) importance since giving a connection with respectively Addis Ababa and Port Sudan.

Two other exceptions to the above definitions are the Tessenei - Barentu - Mendefera and the Nefasit - Dekemhare - Tera Imni roads which, while also not starting from the capital, form part of the alternate transport corridor VII, i.e. Nefasit - Mendefera - Barentu - Tessenei road (Alternate to corridor IV, i.e. Asmara - Keren - Barentu - Omhajer road) that the Government of Eritrea is creating to serve the Western Lowlands.

The geometric characteristics of primary road have been defined as a carriage way of 7m with shoulders of 1.5m.

* **SECONDARY ROADS** : are those roads which connect regions between them or which connect important economical or political centers with regional capitals. Some of these secondary roads are to be bituminous surfaced, others are to be gravelled. Structures such as culverts, lrish crossings and bridges are foreseen on secondary roads. The geometric characteristics of these roads are a carriage way of six 6m with shoulders of 1m.

** **TERTIARY ROADS** : are feeder and rural roads connecting villages or sub-zonal capitals with primary and secondary roads or, with zonal capitals. These also consist roads connecting villages between them. Their length is estimated at 5km. No definite geometric characteristics have been laid down for these roads so far.

[1] *For any further information please contact the Ministry of Public Works.*

2. Industrial Sector Projects

Table 4 Project Type 2.1 – Mining

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
			All large scale mining are covered by Mining Regulations and are Category A
a) precious metals			
b) diamonds			
c) metalliferous ores			
d) phosphates covering >5ha.	d) phosphates covering >1ha. but < 5 ha		All mining of <1ha requires an artisanal mining licence
e) limestone and dolomite covering >5ha.	e) limestone and dolomite covering >1ha. but < 5 ha		
f) stone and slate covering >5ha.	f) stone and slate covering >1ha. but < 5 ha		
g) aggregates, sand, gravel and laterite covering >5ha.	g) aggregates, sand, gravel and laterite covering >1ha. but < 5 ha		Small-scale sand extraction from river-beds is having negative impact even when below 2 ha.
h) clay covering >5ha.	h) clay covering>1ha. but < 5 ha		
i) exploration for the production of petroleum in any form			
j) off-shore activities			

Table 5 **Project Type 2.2 — Processing and Manufacturing Industries**

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) mineral processing, reduction of ores and minerals	a) recycling of metal and non-metal waste and scrap		
b) smelting and refining of ores	b) metal fabrication and finishing		
c) foundries producing >10 tonnes/day	c) foundries producing <10 tonnes/day		
d) brick and earthenware manufacture with production of > 1 tonne/day	d) brick and earthenware manufacture with production of < 1 tonne/day		
e) cement works and lime processing with production of > 10 tonnes/day	e) cement works and lime processing with production of < 10 tonnes/day		
f) glass works			
g) fertilizer manufacture or processing			
h) explosives plants			
i) oil refineries and petrochemical works			
	j) tanning and dressing of hides and skins		
	k) abattoirs and meat-processing plants		
l) chemical works and processing plants			

Table 5 (Continued) Project Type 2.2 — Processing and Manufacturing Industries

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
	m) brewing and malting plants		
	n) bulk grain processing plants		
	o) fish processing plants		
p) pulp and paper mills >5 tonnes/day	p) pulp and paper mills <5 tonnes/day		
	q) food processing plants		
	r) plants for the manufacture or assembly of motorized vehicles		
	s) plants for the construction or repair of aircraft or railway equipment		
	t) plants for the manufacturing or processing of rubber, including recycling of tyres, etc.		
	u) plants for the manufacture of tanks and reservoirs made up of fiber glass, sheet-metal, polyplastic etc.		
	v) plants for the manufacture of plastics		

Table 5 (Continued) Project Type 2.2 — Processing and Manufacturing Industries

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
w) mechanical workshops employing > 50 persons and not located in a specified industrial zone	w) mechanical workshops employing > 50 persons in a specified industrial zone, or > 10 persons outside a specified industrial zone	w) mechanical workshops employing < 50 persons in a specified industrial zone	
	x) processing of paints and paintshops		
	y) textile plants		
	z) printers		
	aa) battery production and recycling		

Table 6 Project Type 2.3 — Electrical Infrastructure

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) electricity generation stations including geothermal >10 MW capacity			
	b) high-voltage (>80kV) electrical transmission lines		
	c) electrical substations		

Table 7 Project Type 2.4 — Management of Hydrocarbons

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) all projects			including storage and transmission of natural gas and combustive or explosive fuels

3. Natural Resources Sector Projects

Table 8 Project Type 3.1 — Dams, Rivers and Water Resources

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) storage dams with surface area >0.5 km2	a) storage dams with surface area <0.5 km2		
b) diversions of river base flows			
	c) diversion of river flood flows		
	d) flood-control schemes		
geothermal (see 10: power supply)	e) drilling for the purpose of utilizing ground water resources		

Table 9 Project Type 3.2 — Biodiversity Conservation

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
	a)establishment of protected areas		
		b) formulation or modification of forest management policies and plans	for b, c, d, g and h: environmental sensitivity should be part of the planning process, not an independent activity

Table 9 (continued) Project Type 3.2 — Biodiversity Conservation

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
		c) formulation or modification of water catchment management policies and plans	
		d) policies and plans for management of ecosystems, especially by use of fire	
	e) commercial exploitation of natural fauna and flora		
	f) release of alien species of fauna and flora into natural ecosystems		
	g) reintroduction of indigenous flora or fauna into previous habitat		
		h) formulation or modification of grazing management policies	
		i) formulation or modification of integrated coastal zone management policies and plans	
	j) applications for access to genetic resources		

Table 10 Project Type 3.3 — Forestry

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
a) all timber harvesting from natural forests			
	b) timber harvesting from commercial plantations		
	c) establishment of all new plantations involving exotic species		
		d) reforestation (of an area of previous forest cover)	
	e) afforestation (of area not previously under forest cover)		

Table 11 Project Type 3.4 — Agriculture

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
	a) all new agricultural projects involving clearance of natural vegetation cover, including intensive livestock production		ESA rule must be rigorously applied for these projects
	b) shift from rain-fed agriculture to irrigated agriculture		
	c) changes in pesticide and/or chemical fertilizer use on existing projects		
	d) introduction of new, non-indigenous plant/animal domesticated varieties for commercial production		

Table 12 Project Type 3.5 — Aerial Spraying

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
	All aerial spraying activities except food security emergencies		including possible rain-seeding projects

Table 13 Project Type 3.6 — Fishery

Column I (Category A)	Column II (Category B)	Column III (Category C)	Comment
	a) purse seine		
	b) beach seine		
c) trawling			
		d) hook and line	
	e) gill net and drift net		
	f) shark fishing by drift net		
	g) traps		
h) aquarium			
	i) non-fish harvest (molluscs, sea slugs, etc.)		
j) aquaculture			
k) auxiliary fisheries support development			

Notes for fisheries project screening rules

a) If environmental evaluation indicates probable impact on non-target species, then establish quota system[1];

b) Use EE questionnaire to establish quota;

c) Only in depths of more than 30m.; shrimp fishing by industrial vessels only in depths of more than 30m.; take of non-saleable catch (trash rate) must be less than 20%; mesh size for trawling must conform with Eritrean regulations for different species, quota, etc.; use of bobbins must conform to current regulations; use of Turtle Exclusion Device (TED) and/or others where appropriate[2];

d) Category C if project conforms to existing regulations for gear and mesh size; e.g. drift nets should not exceed 1 km. (joined or cumulative); there must be adequate marking and recovery marking system (e.g. use of float, radio, etc.) to prevent "ghost fishing" by lost tackle;

e) Licence should be subject to adequate standards agreed with shark product dealers for maximisation of use of species and non-target parts e.g. fins linked with dried meat quota;

f) Always subject to quota (e.g. lobster), size, non-berried (season); etc.

g) Always subject to quota, regulations on numbers and areas to be harvested, catching methods, storage methods (survival rate), transportation methods (IATA)[3]

h) Always set quota and subject to regulations based on processing quality, fuel wood use (e.g. not mangrove) through dealer control;

i) All sizes

j) Processing plant, jetties, other infrastructure.

[1] Need information on procedure for establishing quota system;

[2] Refer The foreign fishing vessel regulations Legal Notice No. 38/1998, Article 16 (1)(a).

Appendix B Proposed Environmentally Sensitive Areas

The proposed Project Screening process for Environmental Assessment uses project type and scale lists to assign projects into three categories:

- Category A: Full EIA required;
- Category B: Environmental Evaluation required; or
- Category C: No further environmental assessment required.

The use of a "hard-rule" screening procedure based on project type and scale alone carries a risk that some negative environmental impacts might be inadequately dealt with if a specific project type is treated in the same manner regardless of its geographical location. The same project implemented in two different locations may have radically different environmental impacts. In order to minimise this kind of risk, the project screening process also requires that projects pass through a "location filter".

Application of the location filter during screening is simple. If the impact of a project of a particular type and scale overlaps with a designated Environmentally Sensitive Area (ESA), then the project is automatically given additional consideration during environmental assessment.

This increased attention may take one of three forms:

- the project owner can be asked to consider relocation of the proposed project away from the ESA, thus mitigating any potential impacts immediately;
- there is greater consultation between the project owner and the government agency responsible for registration of the ESA (e.g. Ministry of Tourism for a site of scenic beauty);
- the project is "raised up" by one screening category (that is from C to B, or from B to A); thus the project will undergo a higher level of environmental

assessment than it would if the project were located in another, less environmentally sensitive area.

A preliminary Environmentally Sensitive Areas list is given below. This list, which will be revised at regular intervals, should be used during all project screening to ensure that the geographical location of a project is given full consideration before projects are granted environmental clearance.

The ultimate goal for the ESA process is to produce a digitised map showing all environmentally sensitive areas throughout the country - this will provide a quick-reference guide during project screening. A preliminary "manual GIS" map was produced using transparencies in the first National Environmental Assessment Workshop; Asmara; September 1997. The DoE is collaborating with other ministries to collate the equivalent digitised information in order to produce a more accurate GIS database which can be used to produce a more accurate map and also revised and updated at regular intervals.

For the purpose of the EA Procedures, Environmentally Sensitive Areas fall into two types:

(I) Areas whose natural and socio-cultural characteristics make them more vulnerable to significant negative change generated by human development activities. This includes locations which:

- have a potential or actual use which is dependent upon maintaining natural features (for example tourist sites, areas of scenic beauty)
- represent an important part of Eritrea's biodiversity;
- perform important "ecological functions"; for example through provision of environmental services (water catchment, erosion control, etc.);
- form an important part of Eritrea's cultural heritage.

(II) Areas whose natural characteristics make them likely to present a significantly increased risk i.e. hazard to normal project implementation and operation.

This includes:

- areas whose natural environment or conditions presents an increased risk to project viability e.g. seismic risk;
- areas whose population density or physical infrastructure would lead to significant costs in the event of project failure (e.g. release of toxins);
- increase the probability of project success through avoidance of natural environmental hazards.

Preliminary ESA List

The draft list of environmentally sensitive areas should contain all sites which belong to the following categories:

A. Land Use and Geology

(i) Any area known to have a history of high seismic or erosion activity; for example: a 30km wide strip of the eastern coastline of Eritrea north from Massawa to the border with Sudan is considered to be especially prone to seismic activity, whilst a 30km^2 area SW of Mendefera and NW of Adi-Quala is especially prone to high erosion losses;

For additional details contact: Department of Land, Ministry of Land Water and Environment (MLWE), or Department of Mines, Ministry of Energy and Mines.

(ii) Any area with a known high potential for mineral resource extraction, including:

Oil and Gas: The entire Red Sea Economic Zone of Eritrea is under investigation for oil and gas exploitation;

Minerals: A large part of Gash-Barka; the Buri Peninsula, an area around Keren; an area NW of Nakfa; and an area around Asmara;

For additional details contact: Department of Energy, Ministry of Energy and Mines and relevant Regional Administration.

B. Water

(i) Any areas which already serve important water supply functions for domestic or agricultural use;

(ii) Any permanent or seasonal water bodies used for domestic or agricultural water supply;

(iii) All major perennial and seasonal rivers (Gash; Mereb/Barka, Anseba; Harsile; Moga'e; Labka; Asgehde/Hadas; from Afambo -> Idi)

For additional details contact: Water Resources Department, MLWE; relevant Regional Administration.

C. Areas of Cultural Heritage Potential

Eritrea is blessed with perhaps 20,000 to 40,000 heritage sites, many of them having global, continental, and national importance. Many areas of the country can be considered extremely sensitive to development. Knowledge about the most sensitive zones is growing every day. However, many potentially sensitive areas are not yet known because archaeologists and heritage managers are only beginning to document the presence of cultural heritage sites. This means that any development may result in a negative environmental impact on heritage resources if the National Museum is not first contacted. Once contacted, Museum and University personnel will make a rapid assessment survey to clear the area for development or to work with planners in suggesting mitigating alternatives to activities that will result in the destruction of cultural heritage sites. The following areas are considered to be highly sensitive:

(i) Archaeological sites and monuments, most of which are not yet registered with the national Museum, thus requiring caution in identifying potential sites that may be endangered. Since sites registered with the National Museum form a very small portion of Eritrea's cultural heritage (see Table 14), any listing of sensitive areas is incomplete and potentially misleading. To guard against inadvertent loss of priceless and irreplaceable cultural heritage, the National Museum must be asked to survey or assess areas for development in the following zones:

a) Greater Asmara, particularly the periurban area. Heritage surveys show the following areas to be of very high sensitivity:

Sembel, Qushet, Akria, Mai Tchuhot, Amba Galiano Qehawta, Biet Ghiorgis and Godeayf.

b) Adi Qeyeh, Senafe, Tekonda, Qohaito Plateau, Dahlak Kebir, Metara, Adulis, Foro, Zula: All are extremely sensitive regions and current town and village expansions are negatively impacting both known heritage sites and many others just recently documented.

c) Greater Keren, Mendefera, Massawa--all of these urban areas are known to be surrounded by archaeological sites, most of which have not yet been assessed in detail.

d) All settlements greater than 400 people in the highlands between Decemhare and the Ethiopian border should be considered within a sensitive heritage region.

e) All areas along natural waterways--where prehistoric and historic communities settled should be considered sensitive for cultural heritage.

(ii) Historic places registered with the National Museum, as well as those not registered with the National Museum but known to local communities or residents. Such known places include sites such as the Nakfa trenches, Adi-Shrum, Adulis, and underwater wrecks. Any structure built in a traditional architectural style may also qualify as a potentially historic place, depending on its particular history.

(iii) Religious and historical places:

(a) **Religious places** such as Debre Bizen, Debre Libanos (Hamasien); Debre Sina; Mariam Da'erit, Sheikh Al Amin (Biet Ghiorghis), Sheikh Seid (Emberemi, Wekiro), and many others not mentioned here. Traditional religious shrines used by non-Christian and non-Muslim peoples are considered as sensitive as those mentioned above.

(b) **Historical places** include more recent historical places which have figured critically in the formation of the national

(b) **Historical places** include more recent historical places which have figured critically in the formation of the national identity: Nakfa, Himbol, Arareb, Amberbeb, Halibet, Tsabra, Embalqa, Arag (wina).

Table 14 A Catalogue of Some Known Eritrean Archeological Sites *

Name	Location	Nature of Site/Description
Adi Amusat	Zoba Ma'ekel S.West of Qushet	Settlement Ruins
Adi Qontsi	15kms. West of Asmara Zoba Ma'ekel	Settlement Ruins
Adi Ghiorghis	Region of Adi Qeyeh near the town of Aba-Selama Zoba Debub	Ancient tomb
Adi - Hefut	2km North of Mai-Ayni Zoba Debub	Rock Art
Adi Gramaten	Some Kms. West of Kesskesie Zoba Debub	Inscriptions +Ruins
Adi Qushet	S.West of Asmara Zoba Ma'ekel	Settlement Ruins
Adi-Lessim	3km, North of Asmara Zoba Ma'ekel	Settlement Ruins about 600 meters long
Adi Qeyeh	Zoba Debub	Obsidian tools
Adi Shemaghele	5km N.West of Asmara	Settlement Ruins
Be'atti Abraham	Amba Soira near the ruins of Hara Morgasen Zoba Debub	Settlement + Ancient toms
Be'atti Abay Hagos	North of Adi-Qeyeh in the Valley of Hembarten	Open-shelter and ruins of pillars.
Baraknah	About 15km South of Sen'afe Zoba Debub	Medieval church
Beleza	8km. North of Asmara Two ruins one found North of the lake another on the South Zoba Ma'ekel	Many fragments of artifacts, grinding stones, pottery etc.
Bet-Aba Hanni	North of the great site of Der'a Zoba Debub	Antique ruins of settlement area
Bet Gheorghis	4kms. of Asmara Zoba Ma'ekel	Habitation site
Bihat	On the plain of Adi-Gulti S.s.W. of Metera, West of Berakit Zoba Debub	Ancient disappeared residence with ruins pillars. The church of Kidane Mehret is also surrounded with ancient ruins.
Da'ero Qawlos	for 8kms. S.W.of Asmara Zoba Ma'ekel	Rock-Art
Deber-Be'at	Around Aratu (Marya Neri)	Ancient residenies and ancient tombs.
Debre-Qedus-Mameruk	North of Debir Be'at near Keren-zoba Anseba	Tombs with oblisks and inscriptions a very large and extensive site.
Dahlak-el Khebir	Island of Dahlak khebir Semenawi Qeyeh Bahri	Ruins of antique city with large necropoleis

* This is incomplete information and is designed to illustrate the extent of sites, based on current limited knowledge.

Table 14 (Continued)

Name	Location	Nature of Site/Description
Demba-Mec	South of Adi Ugri Zoba Debub	habitation site
Der'a	three hours drive North of Adi-Qeyeh on the way to Halai	A very large site with ancient pillars, a churches (6th century A.D) and fragments of inscriptions
Debarwa	At 40kms. S.of Asmara near the church of Enda-Mika'el Zoba Debub	Settlement Ruins
Debre-Tsion	4km. N.of Asmera Zoba Ma'ekel	Habitation site
Deqemhare	42km.S.of Asmara near the road that goes to seghenyti. the sit is 700m. from North to South 400m. from West to East. Zoba Debub.	Settlement Ruins
Debdeb	Shimezana district of Wodi Ekele-Meshal 200km. from the main road 9km. South of Sen'afe Zoba Debub	Ruine of a sphina with sabean from the inscription broken stelae with decrations
Edit	Shimezana between barakna and Galeb Zoba Debub	Inscriptions Rock engravings
Enda-Aba-Metta	16km. South West of Debarewa	Ancient basin and inscriptions in Ghe'ez.
Ena-Gaber-Ona	between Tedrer and Temeza on the side of river mereb Zoba Debub	Settlement Ruins
Enzlal	Habab,-rora Asgheda about 16kms.South of Baqla Zoba Anseba	Probaly an ancient temple containing Sabean inscriptions
Eyilu	20 km.South of Asseb on the road towards Raheita Debubawi-Qeyeh-Bahri	Tombs
Feqya	South of Metera about 3km North east of Bihat	Ruins of an ancient temple
Foru	Region of Aratu Zoba Anseba	Settlement ruins
Gabaz	South of Adulis Semenawi-Qeyeh Bahri	Settlement Ruins
Golo	On the hills of Ambasoira Zoba Debub	Caves and Tombs
Grat-Mah-Derhe	South of Mai-Turub North of Amba Helya 2km North of Anan Village Zoba Debub	Temples Ruins and ancient residences
Godayf	Southern Asmara Zoba Ma'ekel	Prehistoric site stone-tools
Guddo-Ona	At 10kms. North west of Asmara near Tsa'eda kristian	Settement ruins
Guna Guna	Sen'afe region Zoba Debub	Ancient church
Gura	Suburb of Deqemhare near the Airport Zoba Debub	A number of antique sites
Hachel Ona	5km. North of Asmera about 2km of Mai-Melaise Zoba Ma'ekel	Settlement site
Hadamu	North of Asmera Zoba Ma'ekel	Settlement Ruins
Halhale	Near Debarwa Zoba Debub	Toms
Ham	Shimezena West of Zelambessa	Antique sites medieval church and mummies

Table 14 (Continued)

Name	Location	Nature of Site/Description
Keskese	2kms.North of Ama-Tarika Between Sen'afe and Adi-Qeyeh Zoba Debub	Ancient residence colums with inscriptions
Kwazen (Adi-Saka)	Asmara suburb Zoba Ma'ekel	Tombs
Kodemas Amba	Near Asmara 500-600m South East of Debre Sie	Settlement Ruins
La'eli'O	Near Qohaito North west of Goreita 200m from La'elio village. Zoba Debub	Temples, pillars and Sabena inscription
Margebla	13kms. South of Asseb Debubawi Qeyeh Bahri	Obsidian tools and ruins
Metera (Belew-Kelew)	South of Sen'afe Zoba Debub	Settlement ruins stele one of the rare excavatel sites in Eritrea.
Mai-Duburce	Zoba Debub	Rock Art
Mai-Mefales	Asmara Suburb Zoba Maekal	Settlement
Mai-Melatse	Asmara Suburb	"
Mai-Demnet	Asmara Suburb	"
Mai-Melegen	Asmara Suburb	Settlement ruins
Mai-Tsadqan	Asmara Suburb	Settlement ruins
Mai-Turub	5km. west of keskese Zoba Debub	Secular and religious ruins
Mai-Tchehot	South East of the train station at Asmara Zoba Ma'ekel	Groups of ruins
Medri-Tsion	20km. North of Asmara Zoba Ma'ekel	Tomb-pre-christian and bones and pottery
Me'rad Worqi	Half way between Bihat and Feqya Zoba Debub	Antique site
Mehlab	3 hrs from Gheleb mensa'e Bet Eshakan Zoba-Anseba	Tomb
Menah	Adi-Qeyeh region in the Abenehe valley South of Zeban Tahsas at the foot of Zeban Morora Zoba Debub	Ruins
Messalib	Between Tedrer and Temeza Zoba Debub	Prhistoric Stone tools
Naqfa	Zoba Anseba	Tomb Antiqu Recent Sites
Ona-Andom	N.N West of the Village Ona Andom Zoba Debub	Hundreds of ancient wells
Raheita	60km.S.of Assab S.East of Margebla near the Djibouti frontier Debubawi Qeyeh-Bahri	Settlement site grinding stones and ancient Osteris
Rehya	Zoba Debub	Ruins
RoRa hayar	N.West of Keren Zoba Anseba	Rock Art
Rora Laba	Zoba Anseba	Several Steles with Sculptured loins secular construction
Rora Maret	Zoba Anseba	ruins, rock Art obsidian tools

Table 14 (Continued)

Name	Location	Nature of Site/Description
Salham Nahara	Half way between Adi-Qeyeh and Der`a Zoba Debub	Secular buildings
Tse`azegha	20kms of Asmara	Ancient gold mine
Tsa`eda Kristian	15km North of Asmara`	Ruins pottery etc.
Tekhonda`e	S.of Adi Qeyeh Zoba Debub	An antique city
Terer Gemel	Between Techer and Temeza near the bank of rives Mereb Zoba Debub	Settlement ruins
Woqerti	30km.South of Asmara	Antique city
Wokedeba	West of Asmara	Full of ancient tombs and obsidian tools
Yolwa Amba	South of Zula Semanawi Q.B	Obsidian Tools
Zala-Bet meka`e	154km from Asmara towards Enda-Gaba Kokobay Zoba Debub	A big site probably an antiqi city
Zala-kessad Mai	4km from Metera near the village of Adi-Baker Zoba Debub	Ancient ruins
Zeban Kutur	30km. North of Mettera Zoba Debub	Ruins, dams etc.
Zokalla	South East of Sen`afe Zoba Debub	Religions buildings etc.

For additional details contact: National Museum of Eritrea, Ministry of Tourism and relevant Zonal Administration.

D. Potential Tourist Areas

The potential tourist areas(and hence to be treated as environmentally sensitive areas), as identified by the Ministry of Tourism are listed below. Considering the broad nature of tourism, however, it is natural to have an overlap of environmental sensitive areas(ESA) designated as potential tourist areas with those identified as ESA by other Government agencies, such as the National Museum of Eritrea, Ministry of Agriculture, Ministry of Fisheries ...etc. These overlaps should be viewed as strengthening and not weakening the protection and wise use of our natural resources.

(i) Game parks: Nakfa and environs, Buri Pensuala, Gash Barka area, Semienawi Bahri, Mangrooves trees and Reverine forest (such as doum palm trees)

(ii) Rift valley areas

(iii) Danakil Depression

(iv) Marine ecosystems

(v) Bird sanctuaries

(vi) Beach Resorts: Gurgusum, Dissie

(vii) Archaeological Heritage in all major urban areas(City or town with population of greater than 10,000): Asmara, Massawa, Keren, Assab Mendefera other towns in other parts of the country.

(Viii) Health Resorts: Mai Wui, Irafayle, Adi Ra'esi; Gabr Deranto etc.

(ix) Areas of Outstanding Scenic Attractions: Mountainous peaks, scenic valleys like Durfo, Green Belt (Mrara, filfil, Fagena); Asmara-Massawa Road; Denakil Depression, Alid volcano, Railway and associated attractions.

(x) Archaeological sites

(xi) Any areas occupied by minority ethnic groups

For additional details contact: Ministry of Tourism, National Museum of Eritrea, relevant line ministries and Zonal Administration.

E. Biodiversity

(i) All protected areas or areas proposed for protection[1], including national parks and other categories of protected areas, including watershed and forest reserves, plus permanent and temporary woodland enclosures;

[1] Note: Currently, there are no gazetted protected areas in Eritrea. The following locations have been identified as possible locations for protected areas, but have yet to be surveyed in detail: Semenawi and Debubawi Bahri; Buri Peninsula;

(ii) Any area, including permanent or seasonal waters, outside existing or proposed protected areas known to contain rare or endangered species and sub-species, especially those thought to be endemic to Eritrea[2]

(iii) Any area known to contain a significant density of the following tree species: *Ficus vasta, Ficus sycomorus, Acacia albida,Olea europaea ssp. africana, Juniperus procera, Hyphaene thebaica, Adansonia digitata* ;

For additional details contact: Ministry of Agriculture and relevant Zonal Administration.

F. Fisheries

(i) Any coastal areas designated as especially rich in coral or mangrove habitat, especially when this is known to be the breeding ground for species of conservation; of commercial importance; or provides an important ecosystem service (e.g. buffer against erosion, flooding);

(ii) Coral areas includes: seagrass meadows, sponge areas and algal reefs. e.g. sand beaches known to be used, or deemed suitable for seabird and turtle nesting; sand dune areas used by the Crab Plover (only two sites known, one in the Gulf, and one on an Eritrean island).

(iii) Mangrove areas including fringe mangrove along much of the Red Sea Coast.

(iv) All islands and undersea mounts in Eritrean national waters, including Dahlak Peninsula; Hando Islands; plus Fatma and Halib (near Aseb);

Rora Habab; Halhal Plateau; Danakil Depression; Yob; Gash-Setit; Dehalak Islands; also the Acacia woodland south of the Gash; Hagar Pine Forest;

[2] Rare and endangered animal species in Eritrea include Elephant (*Loxodonta africana*); Greater Kudu (*Tragelaphus strepsiceros*); Leopard (*Panthera pardus*); Lion (*Panthera leo*); Wild ass (*Equus africanus somalicus*); Nubian ibex (*Capra ibex nubiana*); Dugong (*Dugong dugon*); Crocodile (*Crocodilus niloticus*). Some of these species may be locally extinct in Eritrea; some other species not listed here may need consideration.

For additional details contact: Ministry of Fisheries; Zonal Administration for Seminarwi Keyih Bahri and Debubawi Keyih Bahri.

G. Agricultural and Forestry Land

High potential agricultural land is scarce in Eritrea, comprising less than 10% of total land area. It is essential for national food security, etc. that areas of high agricultural potential, plus the areas which protect these areas from excessive erosion, etc., are not converted to other uses, or damaged by indirect impacts, without careful assessment of the consequences.

Similarly, Eritrea is short of fuelwood resources, thus any proposal for conversion/loss of potential forest and woodland land should also be carefully assessed.

Even within these agricultural and forestry areas, proposals for major changes in agricultural or forest practice should be carefully assessed for environmental and socio-economic impacts. At present, the only regulations which govern these practices are those summarised in Annex A below:

(i) All high and medium potential agricultural land; including any total area containing over 50% of land classified as of high potential for agriculture; e.g. a large part of Gash-Barka; the area SE of Mendefera and E of Adi-Quala; and a strip of the Seminawi Keyih Barhri Eastern Lowlands;

(ii) All land considered to be high potential natural or productive forest and woodland.

For additional details contact: Ministry of Agriculture; Land Department MLWE; and relevant Zonal Administration.

ESA Annex A: MoA Forest Directives: Directive II (March 1994)

In the absence of a revised Forest and Wildlife Proclamation, the Ministry of Agriculture is basing its policy on the following directives:

- No agricultural concessions on land with >25% tree cover;
- No removal of doum palm and other important trees from concessions granted on land with <25% tree cover;
- At least 30% of total cover to be left for trees, including all land with 50-100m from river banks;
- No rain-fed concession of >40 ha. should be established within 500m of another such concession;
- No rain-fed concession of <40 ha. should be established within 50m of another such concession;
- No forest product-using institutions may be located in forest areas;
- No cutting of trees without licence;
- No use of fire on farmland;
- No use of natural resources from within protected areas;
- No agricultural concession within 50-100m of tree-lined banks of all river courses and springs, especially floodplain rivers;
- Protection of all individuals of: *Ficus vasta, Ficus sycomorus, Acacia albida, Olea europaea* ssp. *africana, Juniperus procera, Hyphaene thebaica, Adansonia digitata ;*
- No cultivation on land over 35° slope.

Appendix C Project Environmental Screening Form (DOE/PSF)

Project details

Project Name _____

Project Number _____

Date of Registration _____

Screening Government agent details

Government Agency _____

Nominated Officer performing Screening _____

Position of Nominated Officer _____

Other persons (if any) consulted during Screening process:

1 _____

2 _____

3 _____

Date of Screening Assessment _____

Project Categorisation

(Circle appropriate category)

A Full Environmental Impact Assessment Required

B Environmental Evaluation Required

C No Environmental Assessment Required

Justification of Categorisation

Category A

(Circle appropriate justification or justify in writing)

1. Project appears in Column I of Appendix A;

2. Project appears in Column II of Appendix A, but overlaps with an Environmentally Sensitive Areas (ESA) from Schedule B, and has been recommended for upgrading by ESA authority;

Other: (specify reason in full)

Category B

(Circle appropriate justification or justify in writing)

3. Project appears in Column II of Appendix A and does not overlap with an ESA from Appendix B;

4. Project is not in Column I or II of Appendix A, but does overlap with an ESA from Appendix B; and is recommended for upgrading by ESA authority;

5. Project is not in Column I or II of Appendix A, but sufficient information for definitive categorisation is lacking;

Other: (specify reason in full)

_____

_____

_____

_____

Category C

6. Project is not contained in Appendix I or II of Schedule A and does not overlap with an ESA from Appendix B;

Other (specify reason in full)

_____

_____

_____

Screening decision registration at Department of Environment _____

(Place a check in the box and enter date)

Screening Record Sent to
Department of Environment ☐ Date sent _____

Signature and Seal of Screening Agent

_____

Date _____

Screening Record Registered at Department of Environment

Date _____

Department of Environment Action Taken

Acceptance _____

Recommendation for Review of Decision _____

Signature and Seal of Registering Officer

_____

Appendix C Project Environmental Evaluation Clearance Form (DOE/EECF)

Project details

Project Name _____

Project Number _____

Date of Registration _____

Evaluation Government agent details

Government Agency _____

Nominated Officer
performing Evaluation _____

Position of Nominated Officer _____

Other persons (if any) consulted during Evaluation process

_____

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Date of Evaluation _____

Record of environmental evaluation decision_____

Project Categorisation
(Circle appropriate category)

1 Unconditional Environmental Clearance

2 Conditional Environmental Clearance

3 Environmental Objections (Referral for full EIA)

4 No Environmental Clearance

(A justification of the Environmental Clearance Decision should be provided below)

Environmental Evaluation Decision Registration at Department of Environment_____

Date Evaluation Decision Sent to Department of Environment _____

Signature and Seal of Evaluation Agent _____

Date _____

Department of Environment Response to Environmental Clearance Decision_____

Response

A No objection

B Objection

Date written objection sent to Competent Authority _____

Responsibility for preparation of written elaboration of objection___

Name _____

Date written elaboration sent to Competent Authority _____

Justification of Categorisation
(Summary of Main Points):

_____

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Appendix C Project Environmental Impact Review Clearance Form (DoE/EIRCF)

Project details

Project Name _____

Project Number _____

Date of Registration _____

Environmental impact review details

Date of Impact Review Committee Meeting _____

Composition of Impact Review Committee _____

Chairman Department of Environment _____

Committee Members _____

_____

_____

_____

_____

_____

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_____

Documents Reviewed by Committee

Environmental Impact Assessment Report _____

Environmental Management Plan (draft) _____

Comments from Stakeholders (list all below) _____

Response from Project Owner _____

Names of Stakeholders making Comments

_____

_____

_____

Record of environmental impact review committee decision

Project Categorisation
(Circle appropriate category)

A Unconditional Environmental Clearance

B Conditional Environmental Clearance
(Project requires minor changes)

C Postponed Environmental Clearance
(Environmental Objections, thus project requires extensive redesign)

D No Environmental Clearance
(Project presents unacceptable environmental risk)

(Record justification for category on next page)

Registration of environmental impact review committee_____

DECISION AT DEPARTMENT OF ENVIRONMENT

Date Impact Review Committee (IRC) Decision sent to Department of Environment

_____

Signature and Seal of IRC Chairman _____

Date _____

Justification of Review Categorisation_____

(Summary of Main Points)

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PROFORMA FOR REVIEW OF ADEQUACY OF CONTENT AND STRUCTURE OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT (DoE/PEIAR)

	Adequacy Assessment			
Report Section	**Adequate**	**Incomplete**	**Inadequate**	**Not applicable**
General Layout:	❑	❑	❑	❑
Cover Page	❑	❑	❑	❑
Executive Summary	❑	❑	❑	❑
Table of Contents	❑	❑	❑	❑
Introduction	❑	❑	❑	❑
Administrative, Policy and Legal Requirements	❑	❑	❑	❑
Consideration of Impacts of Alternatives				
a) Description of sources of impacts	❑	❑	❑	❑
b) Description of impact effects	❑	❑	❑	❑
c) Assessment of impact significance	❑	❑	❑	❑
d) Evaluation of alternatives	❑	❑	❑	❑
Definition of Technical Terms	❑	❑	❑	❑
List of Main Contributors to Report	❑	❑	❑	❑
Bibliography (references, other data sources and personal communications)	❑	❑	❑	❑
Appendices (including ToR)	❑	❑	❑	❑
Record of Consultation:	❑	❑	❑	❑
a) List of third parties contacted	❑	❑	❑	❑
b) Record of stakeholder consultation	❑	❑	❑	❑
Conclusion and Recommendations	❑	❑	❑	❑

PROFORMA FOR ASSESSMENT OF ADEQUACY OF CONTENT AND STRUCTURE OF AN ENVIRONMENTAL MANAGEMENT PLAN (DoE/PEMPR)

	Adequacy Assessment			
Report Section	**Adequate**	**Incomplete**	**Inadequate**	**Not applicable**
Brief Description of the Proposed Project:	❑	❑	❑	❑
Mitigation Activities:				
List of Proposed Mitigation Activities	❑	❑	❑	❑
For each Proposed Mitigation Activity (photocopy form as necessary)				
(i) Description of Activity	❑	❑	❑	❑
(ii) Responsibility for Implementation	❑	❑	❑	❑
(iii) Timeframe for Implementation	❑	❑	❑	❑
(iv) Estimated Cost of Mitigation	❑	❑	❑	❑
(v) Predicted Impact of Mitigation	❑	❑	❑	❑
(vi) Responsibility for Monitoring	❑	❑	❑	❑
(vii) Responsibility for Action after Non-compliance	❑	❑	❑	❑

APPENDIX D: Checklist for Project Scoping

Environmental impact checklists are used as prompts during project scoping; they should be used to ensure that all aspects of a proposed project have been considered for potential impacts on different aspects of the environment. At the same time, checklists should not become a barrier to thinking about project impacts in broader, more holistic terms.

The principle for using the checklists below is simple:

- Use the project activities list to "breakdown" the project into individual actions which might have negative environmental impacts;

then, for each identified project activity:

- Use the project components list to assess whether each identified activity may have an impact on each "part" of the surrounding environment.

This scoping procedure can be carried out using the checklist questions arranged as a matrix, using the following responses:

positive impact (+) ;
negative impact (-) ;
no impact (**0**), and
unknown impact (**?**).

Checklist of project components

Project activities

Location and physical works

_ Occupation of site area and boundary
_ Demolition or occupation of existing property
_ Construction of underground structures - tunnels, excavations, drainage works
_ Construction of aboveground structures - buildings, earthworks, fences, other structures
_ Construction of offshore structures
_ Changes in land use
_ Creation of new access routes
_ Closure, diversion or relocation of existing roads, utilities, water bodies, etc.

Construction phase

_ Surveys and tests
_ Site clearance and preparation
_ Earthworks including cut and fill, tunnelling and excavations
_ Dams, impoundments, piers, sea walls, revetments, dredging
_ Stream crossing, diversion, culverting, etc.
_ Supply of materials, power, water
_ Plant operation, movement of men and materials, piling, blasting, drilling
_ Waste disposal - spoil, debris, domestic and hazardous wastes, surplus materials
_ Disposal of site effluents and run off
_ Emissions to air from plant and vehicles
_ Release of light, heat, noise, other radiation
_ Dust generation
_ Use of hazardous materials
_ Temporary occupation of and access to work sites
_ Temporary storage
_ On site and off site vehicle movements
_ Construction employment
_ Provision of housing and other facilities for work force

Operation phase

_ Operation of production machinery or other processes
_ Supply of raw materials, power, water
_ Combustion of fuels in stationery and mobile equipment
_ Storage, handling or transport of hazardous materials
_ Release of residues to air, water, soils, sewerage system
_ Release of light, heat, noise, vibration, other radiation
_ Generation and disposal of wastes - process wastes, mining wastes, redundant equipment, surplus materials, hazardous wastes
_ Use of hazardous materials e.g. pesticides and other chemicals in maintenance
_ Accidents - explosions, releases, spills, fire, etc.
_ Vehicle movements on and off site
_ Operation of ancillary facilities
_ Permanent employment
_ Housing and facilities for work force

Decommissioning and reinstatement of the site

_ Dismantling and demolition
_ Disposal of materials
_ Clean up of site - ground and groundwater
_ Clearance and reinstatement of site
_ After use of site
_ Long term monitoring and mitigation measures

Checklist of environmental components

Physical

_ Geology and ground conditions
_ Soils - quality, quantity, stability
_ Mineral and energy resources
_ Surface water resources - quality, quantity, rate of replenishment
_ Ground water resources - quality, quantity
_ Seas and oceans including coastal waters and estuaries
_ Climate, microclimate
_ Fisheries, angling, navigation, water abstraction, recreation uses (bathing, etc.)
_ Air quality

Land and land use

_ Land uses - residential, commercial, recreation, agriculture (farming and livestock), open space, forestry, community
_ Homes, gardens and other property
_ Land tenure
_ Planned developments and changes in land use

Natural resources

_ Habitats and species
_ Biodiversity, genetic diversity, productivity, nutrient supply
_ Insects, exotic organisms, diseases

Policies and plans

_ Plans, policies and programmes of other agencies

People

_ Visibility/views
_ Noise and vibration
_ Human and environmental hazards
_ Human health, welfare, amenity, personal security
_ Community cohesion and identity
_ Traffic conditions
_ Businesses - farms, commerce, industry
_ Social conditions - employment, demography, housing conditions, local economy
_ Special concerns - minority rights, cultural associations, social institutions

Heritage

_ Archaeological, historic and cultural (e.g. architectural) resources - features, sites, landscapes
_ Landscape resources

Infrastructure

_ Infrastructure capacity - waste disposal, sewage collection and treatment, roads, power, water, telecommunication
_ Public utilities - water supply, power lines, gas pipelines etc.
Facilities susceptible to interference e.g. electrical disturbance.